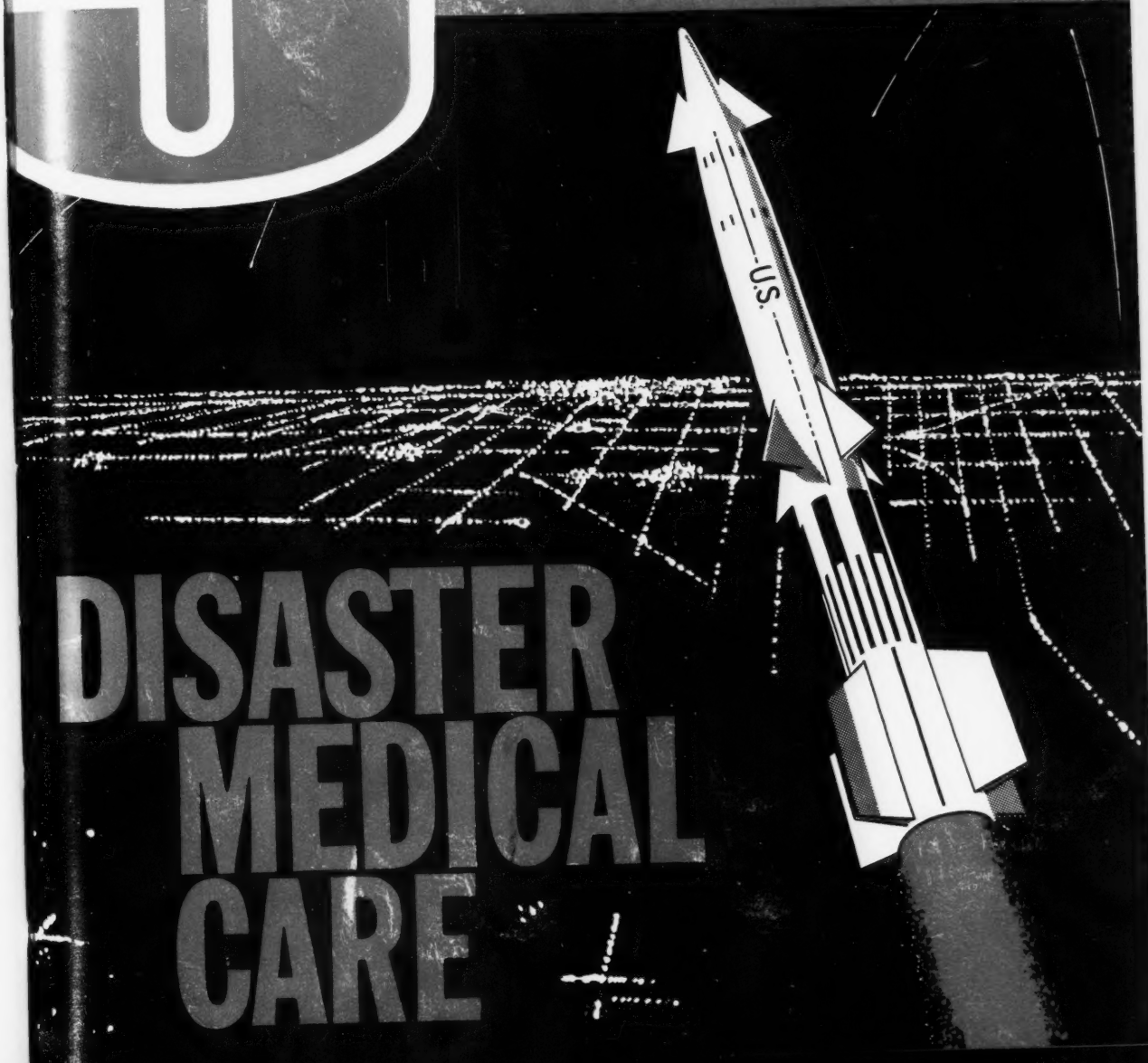
DOES NOT CIRCULATE

Volume 54 MAY 1961 Number 5

the Journal

OF THE OKLAHOMA STATE MEDICAL ASSOCIATION

THE UNIVERSITY OF MICHIGAN
JUN 6 1961
MEDICAL LIBRARY



DISASTER MEDICAL CARE

BENADRYL Hydrochloride (diphenhydramine hydrochloride, Parke-Davis) is available in a variety of forms including: Kapseals® of 50 mg.; Capsules of 25 mg.; Emplets® (enteric-coated tablets) of 50 mg.; in aqueous solutions: 1-cc. Ampoules, 50 mg. per cc.; 10- and 30-cc. Steri-Vials,® 10 mg. per cc.; Elixir, 10 mg. per 4 cc.; 2% Ointment (water-miscible base); Kapseals of 50 mg. BENADRYL Hydrochloride with 25 mg. ephedrine sulfate. *Precautions:* Avoid subcutaneous or perivascular injection. Single parenteral dosage greater than 100 mg. should be avoided, particularly in hypertension and cardiac disease. Products containing BENADRYL should be used cautiously with hypnotics or other sedatives; if atropine-like effects are undesirable; or if the patient engages in activities requiring alertness or rapid, accurate response.

when allergy looms large in the life of your patient...

Medics in Disaster

A full scale nuclear attack on the Continental United States with its attendant devastation, suffering, and terror, is a distinct possibility. The ability of our civilian population to recover from a nuclear attack may be the decisive factor in ultimate victory or defeat for our country. In terms of national survival in a general war, the effectiveness of Military Forces has very little meaning if our Country cannot maintain an effective civil structure after a nuclear attack.

Official Government reports have stated that Civil Defense preparedness could reduce the casualties of any assumed attack on the United States from approximately 25% of the population to about 3%.

The Federal Government is prepared to perform its role as set forth in the National Plan. Military forces are ready. State and local governments are making substantial progress in planning.

The National Security program aims at deterring attack and reducing vulnerability to attack by a complex pattern of military strength, world leadership, diplomacy and strategy. National Security is furthered by economic and military aid to allied and neutral forces, SAC (Strategic Air Command), and STRAC (Strategic Army Corps) units prepared to apply measured forces at appropriate times and places, radar intercept lines, air defense organization, and a strong Army Reserve and National Guard program.

This threat of nuclear attack with its capability of mass destruction of huge elements of our Nation has imposed upon the *Medical and Allied Health Professions* a tremendous responsibility. The saving of lives, particularly of those who can contribute to the survival efforts, will become extremely important, and the Medical and Allied Professions must assume a far larger role in our war potential than ever before. They face the greatest challenge. There will be a tremendous disparity between the medical personnel and supplies on the one hand, and the mass of casualties on the other hand.

It is one thing to speak in platitudes and another thing to study the situation with an eye toward providing the best medical service we can under the adverse circumstances. *The ability to cope with emergency situations is not an innate characteristic. This faculty must be studied and practiced to the same degree that any technical procedure is studied and practiced.*

Who is responsible for Civil Defense? Government at all levels, all industries, all governmental bureaus, all professions, and all *people* are jointly responsible. Disaster Medical Care is not some sort of separate entity unto itself.

Disaster Medical Care is not something which could spring into being in case of an enemy attack. The responsibilities for Civil Defense in general, and for Disaster Medical Care in particular, rest squarely upon every medical and allied organization, and, upon each individual doctor, and each person in the allied health professions.

The *Journal* of the Oklahoma State Medical Association is dedicating this entire issue to Disaster Medical Preparedness, and related Civil Defense, patriotic, and military matters. The practicing physician may glean much information from these factual, scientific, and organizational articles. It is hoped that some impetus will be given to the practicing physician to do some further "homework" in the study of the Communist threat, the United States' position and policy, effects of nuclear weapons, and details as to medical and surgical management of casualties. Retain this *Journal* in your library.

WILLIAM H. REIFF, M.D.
Chairman, Civil Defense Committee
Oklahoma State Medical Association

PRESIDENT'S LETTER

Civilian Defense

It seems reasonable to call your attention once more to the fact that the members of the Oklahoma State Medical Association should consider the possibility of being asked to participate in the care of the State in the event of emergencies. Disasters do come now and then, usually because of incidents over which most of us have little or no control. We now suggest that medical doctors might properly take more initiative in planning.

The specific recommendation is that each hospital in the State should have a Disaster Committee which will cause to be put in writing a plan for emergency care of large numbers of people. This should include the specific assignment of physicians, the allocation of reserve medical and surgical supplies, reference to other hospital personnel, the civic administration, the police and fire department. Extension of the planning might even include "stock-piling" of warm clothing and food, as well as shelter.

These suggestions are obviously inadequate and incomplete but the principal motive of this message is to urge that each medical doctor give some thought and preparation to the possible need which cannot be predicted.

Clinton Gallaher M. D.
President

STATE OF OKLAHOMA
EXECUTIVE CHAMBERS

OKLAHOMA CITY

J. HOWARD EDMONDSON
GOVERNOR

March 8, 1961

Dr. William H. Reiff, M. D.
Chairman Civil Defense Committee
Post Office Box 9696
Oklahoma City, Oklahoma

Dear Dr. Reiff:

The May issue of The Oklahoma State Medical Association's publication sounds as if it will be most interesting and extremely important.

The subject of Disaster Medical Care is close and important to all of us. You are all to be commended on the outstanding contribution which you are making in this field.

Sincerely,

J. Howard Edmondson
GOVERNOR

JHE/ih

OKLAHOMA

Civil Defense

CIVIL DEFENSE *begins* WITH YOU

P. O. Box 3365
Oklahoma City 5, Oklahoma
Phone JAckson 8-4421
Tom Brett—Director

May 1, 1961

Dr. William H. Reiff
Civil Defense Chairman
Oklahoma State Medical Association
P. O. Box 9696
Oklahoma City, Oklahoma

Dear Dr. Reiff:

Many times in the past, we have congratulated you, and members of your Civil Defense Committee, for your Civil Defense contributions -- and again -- we are most happy to forward to the Civil Defense Committee these brief, but most sincere, congratulations.

In this instance, and we feel there will be many more such instances, we refer to this issue of The Journal, published by the State Medical Association of Oklahoma.

Designated as a "Civil Defense Issue" -- it is just that. If other groups related the Civil Defense story in a like manner, then our problems would be fewer.

Again, our most sincere congratulations to you, all members of the Civil Defense Committee and the Oklahoma State Medical Association staff, for the thorough Civil Defense coverage in this issue of The Journal.

Sincerely yours,

TOM BRETT
State Director

TB/pd

OFFICE LOCATION ♦ 30 N. E. 27th STREET

PREPAREDNESS!

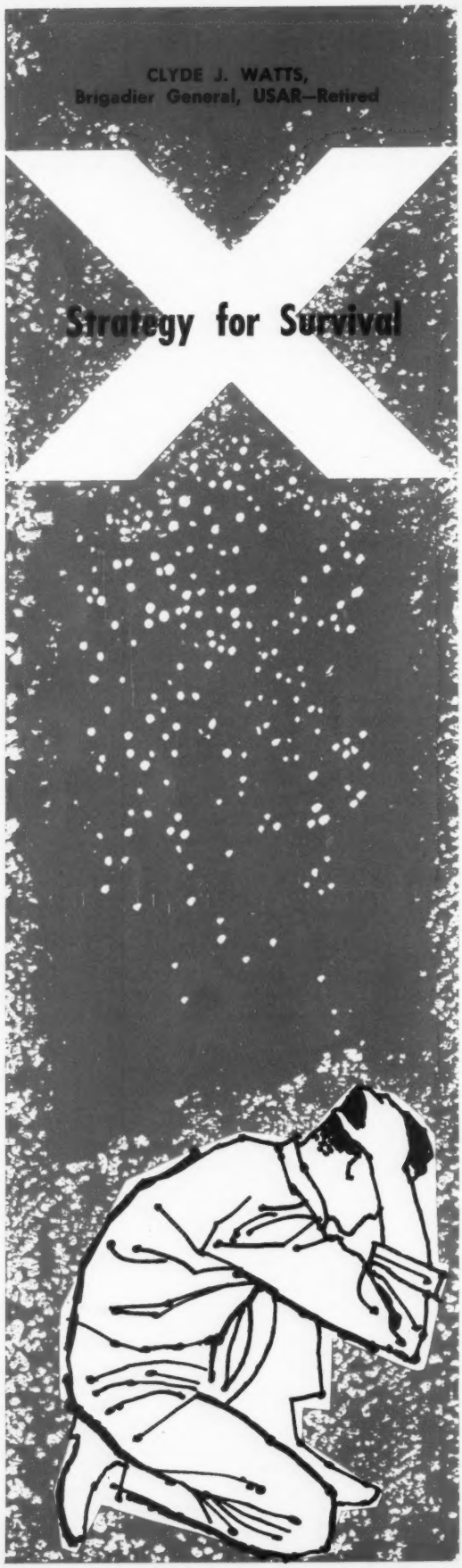
"We shall first dominate Eastern Europe, then the masses of Asia. Finally, we shall encircle the United States, as the last bastion of capitalism. We shall not have to fight. It will fall like an over ripe fruit into our waiting hands." (Lenin, 1918)

"Victory is now in sight." (Krushchev, 1961)

"Let every Nation know, whether it wish us well or ill, that we shall pay any price, bear any burden, meet any hardship, support any friend or oppose any foe to assure the survival and success of Liberty." (Kennedy, 1961)

CLYDE J. WATTS,
Brigadier General, USAR—Retired

Strategy for Survival



WE ARE AT WAR. A space age type of War, a protracted conflict in which our enemy has promised a materialistic God . . . his all powerful state . . . our utter annihilation.

In this all out War, we are making less than a halfhearted effort.

We sporadically demand of our scientists and military the security they are powerless to provide, because it is not their War . . . it is our War . . . a personal War made more sinister and more protracted by our inability to comprehend its objectives, its strategies, its tactics, or even our enemy, who has been charting his course behind barriers of land, sea and air that have lulled us into a sense of false security.

With the present compression of these barriers from days and miles into minutes and seconds (Oklahoma is now as close to Moscow as Berlin to Paris in 1940), we begin to recognize this enemy . . . powerful, brutal, determined, arrogant in his military might and scientific accomplishment . . . contemptuous in his cloak of invincibility.

Through the midst of his propaganda, he becomes more obvious; from his initial pronouncement of global objectives:

> "We shall first dominate Eastern Europe, then the masses of Asia. Finally, we shall encircle the United States, as the last bastion of capitalism. We shall not have to fight. It will fall like an over ripe fruit into our waiting hands." (Lenin, 1918)

down to his confident boasting of present accomplishment.

> "Victory is now in sight." (Krushchev, January, 1961)

It may be later than we know; but it is also earlier than they think. The weakness of power-mad dictators has ever been to under-estimate the latent forces of Freedom. Our survival is still within reach, but the time to reach is desperately short.

Our first reluctant awakening must comprehend the nature of the War our enemies fight . . . Psychological, political, social, economic, industrial, scientific . . . military . . . and must include the concept that the

non-military phase, though lacking the horror, is the more deadly, for it will set up the military phase as a brief but foregone conclusion, a violent, but final, climax.

We must understand that the terrain of this unconventional warfare transcends land, sea and air . . . involves a fourth and new dimension . . . the mind of all mankind.

We must next study our enemy . . . his objectives, his strategies, his tactics, as he has been studying us for forty years; and, with stakes of life or death, we must recognize that our enemy:

1) Has warned that "War to the hilt between Communism and Capitalism is inevitable and that the democracies, stupid and decadent, will rejoice to cooperate in their own destruction . . . in return for phony peace overtures."

2) Has through the means of a World Revolution, pledged his all to accomplish a Communist Utopia . . . after bloody elimination of Capitalistic opposition.

3) Has mounted a steadily accelerating offensive, to push us into a "nuclear corner," where we must choose between surrender or world destruction.

4) Has sold us his concept of "Peaceful Co-existence," with implied promise of easing "cold war tensions," which he alone controls, concealing that his concept of "Peace" means only that we will not seriously challenge his goals.

5) Has used the hope of "Peace" itself as an implement of psychological War.

6) Has built up, with Western aid, a Collossus of one billion slaves . . . a Frankenstein that challenges our very survival.

7) Has extended Communism over two-fifths of the land surface of the earth and is reaching for one-third more, including the Carribbean nations to form the boundary of a new Communist lake.

8) Has organized and supports a hard core Communist conspiracy in the USA with awesome capabilities, as evidenced by success of Communist organized, engineered and financed student riots against the House Committee on Un-American Activities, in San Francisco last May. (See J. Edgar Hoover report, "Communist Target—Youth.")

Finally we must study ourselves, recognizing that we are constantly being weighed in the balance of protracted War, that will change overnight from cold to hot, if and when we are found wanting. We must evaluate our strength and weakness; and resolve to mobilize our vast resources for the awesome conflict, before shifting of the balance of power past the point of no return.

What can we do? If our Government cannot meet the threat, if our leaders be not aware of the stark reality of our peril, how can we? We can! We must!! We shall!!!

We must recognize that our Government is us; and our leaders simply mirror the composite thought and motivation of their people.

We must reject the old truism that the most significant fact of history is man's refusal to learn from history; and avidly do our home work to learn what has produced our present dilemma. This will reveal:

1) In March, 1942, our President, expressing the sentiments of the vast majority of his people, wrote to Churchill:

THE AUTHOR

A native of Oklahoma, General Clyde J. Watts received his LL.B. degree from the University of Oklahoma in 1931. A trial lawyer, he has practiced throughout Oklahoma in State and Federal Courts. During World War II, he served in the Chinese and Burma Theaters as a combat liaison officer with the Chinese Army and as an artillery air observer. In addition to many citations from his own country, including the bronze star and air medal, he received a commendation by the Commanding General of Chinese Combat Command and the Yun Wei medal from the Chinese. Until June of 1960, he was Commanding General of the United States Army Reserve, XIX Corps Artillery, when he retired, by law, upon completion of 30 years service. He is active in both the Oklahoma and American Bar Associations, as well as many civic activities.

"By the time you receive this, you will have learned of my conference with Litvinov, and I expect a reply from Stalin shortly. * * * I think I can personally handle Stalin better than either your foreign office or my state department. Stalin hates all of your top people. He thinks he likes me better and I hope he will continue to do so."

2) Believing that Communists could be motivated by humanitarian motives, we made it possible at Teheran, Yalta and Potsdam for Communism to extend its domain over Eastern Europe and the millions of China, in order to enlist Soviet cooperation in creation of a new world order.

3) We witnessed the ringing down of an iron curtain over helpless peoples of the Captive Nations, who would have throttled their Communist enemies, had we been prepared to assure them the benefit of our Liberty and Justice, for which we had just fought the greatest War in History.

4) We can learn of our rejection of the warning of Churchill, in his 1946 Fulton, Missouri, speech that Communist promises and treaties are scraps of paper.

5) We can observe desperate efforts to deter further Communist aggression by a ring of bases and world wide subsidies.

6) We can even find apologists for these bases, as "increasing cold war tensions," forgetting that they were installed only for defense, and after the aggressive intent of the enemy became brutally obvious.

7) We can find organized theft of our nuclear and defense secrets by the most highly developed spy organization in peace time history.

8) We can find our people complacently oblivious to the stark reality of their peril . . . traditionally devoted to Life, Liberty and Pursuit of Happiness; but so intent upon pursuing happiness that loss of Liberty and even Life seems imminent.

9) We find ourselves, after bitter disillusionment, still equating the enemy's prime propaganda weapon, "Peaceful Coexistence," with an expression of a sincere desire to abandon the icon of his fanatic devotion to world revolution . . . and this so avidly that we have developed the distressing habit of referring to the second greatest butcher of all history by the affectionate appellation of "Nikita."

We must, by a dynamic awakening, as a chain reaction, where the spirit of each will pierce the air conditioned shell of complacency of all, produce a new DETERMINISM:

1) A determination that our Religion will be revitalized as an impenetrable roadblock against the further advance of Godless Communism. That we will meet the challenge of our unholy enemy that he is fighting a "holy war." (Krushchev, January 17, 1961)

2) A determination that we will know, meet and vanquish this enemy in every field of human endeavor in which he chooses to challenge us; and will select new fields of competition in which we are more adept than he.

3) A determination to know, appreciate and perpetuate, as the last bastion of Christian Civilization, this great Country of ours . . . making an *all out effort* our first order of business, and relentlessly wiping out those eroding weaknesses with which we no longer can afford to live, particularly the following:

a) Snobbery . . . which has been classed as the tendency to spend money we don't have to impress people we don't like, and certainly furnishes high octane fuel for expanding the class warfare upon which our enemy thrives.

b) Glorification of crime . . . in our press, T.V., radio, magazines and movies, which not only impose bad thought habits upon the subconscious minds of our people, especially youth, but steals precious time that should be spent in study of our biggest problem . . . survival. Consider the time and space that could be made available if no crime were publicized within a radius of more than one hundred miles from where it happened.

c) Sophistication: Where it has made us apologists for Amercanism; and replace it with a new birth of simple patriotism based upon sincere gratitude for the God-given privilege of being Americans. Recognizing that this is the only nation that seems to have outgrown a spirit of Na-

tionalism, we must foster a return to fundamentals that can be epitomized by the pledgings of our Lives, our Fortunes and our Sacred Honor upon the altar of our Country.

d) Graft, corruption, inefficiency in our government . . . recognizing that the governmental system of our enemy is staffed by scientists, experts and devoted Communists, we must consider the recent warning "concepts and patterns of a more secure past no longer fit present reality," and recognize that only the best in government can meet our competition.

4) A determination to re-establish discipline . . . in our homes, schools and daily life. The *discipline of force* employed by our enemy can be met by our *discipline of faith* only if our people, especially our youth, are trained to voluntarily and cheerfully do the right thing in the right place, at the right time . . . the classical concept of discipline for the American Serviceman. We need a new fad. With our marvelous mass communication media, could we not convince our youngsters that it would be "sharp" to say to elders "Yes, Sir" and "No, Sir," rather than "Uh, huh" and "Hunh, Unh" and "Yeah" . . . as an expression of respect for age and authority, of self respect, and of the new Determinism of which he is a part.

5) A determination simply to go to work . . . a columnist has recently said, "This is the era of the great 'goof off,' the age of the job half done. We have plumbers that won't 'plumb,' executives that won't 'execute,' business men that won't attend to business and workmen that won't work." Either America is going to WORK or a stronger civilization will put us to WORK.

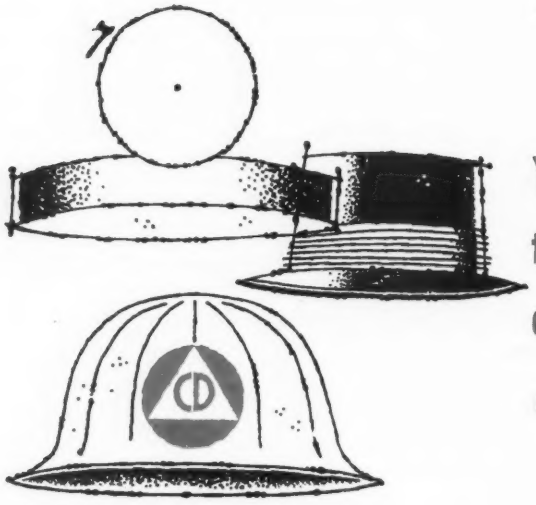
In conclusion, the challenge of new frontiers is gone, with only a faint echo remaining in the gunsmoke of Western movies and T.V.; but we face a new and more demanding challenge, into which our enemy has preceded us . . . the stratosphere and outer space itself, that can be conquered by the same Determinism that will insure our survival.

Our President has well stated, "Let every Nation know, whether it wish us well or ill, that we shall pay any price, bear any burden, meet any hardship, support any friend or oppose any foe to assure the survival and success of Liberty."

He cannot do it alone.

"The things that will destroy America are: Prosperity-at-any-price; peace at any price; safety-first instead of duty-first; the love of soft living and the get-rich-quick theory of life."

President Theodore Roosevelt (1906)



You, the Public, and Civil Defense

FRANK B. ELLIS

IN ORGANIZING his administration, President Kennedy reiterated in a public statement that civil defense operations are vital to national security, and must be performed with maximum effectiveness.

Shortly afterwards, the President sent a message to a group of State, county and city civil defense directors meeting with me in Washington. His statement further stressed the urgency of civil defense preparations by the States, cities and individual citizens in these words:

> "Unless we prepare now for emergencies, our freedom of choice could very well slip from our grasp. Each of us should actively seek to give wholehearted support to his local civil defense corps and its objectives. Survival in disaster can be achieved only when we join in a team effort for our mutual protection."

That is a stirring call for public cooperation, and I know the Chief Executive will give us the leadership we need to prepare our nation for survival if all peace-preserving efforts fail.

Elsewhere in this issue, the specific role of the physician and medical personnel will be explained by officials of OCDM and the Public Health Service. I will attempt here to outline some of the larger considerations that tie local civil defense and the efforts of each citizen to the paramount question of national survival in the age of the nuclear weapon.

Civil defense and military defense are joined today in a team effort to deter attack through preparedness. Our military power guarantees that any aggressor against the United States would suffer tremendous damage. A strong civil defense is essential to survival. Together, these national preparedness programs give the Nation a balanced defense.

Civil defense in the United States is a partnership of Federal, State and local governments. State and Municipal governments are responsible for measures to protect people and property from post-attack hazards. Industry, business, financial institutions, special groups and professional societies like the Oklahoma State Medical Association

have a responsibility to help State and local governments employ their skills effectively for survival and recovery operations. The individual citizen must make preparations to protect himself and his family from the effects of nuclear weapons, especially fallout. The Federal Government, through the Office of Civil and Defense Mobilization, is responsible for leadership and coordination to make State and local operations compatible with national security objectives.

The State of Oklahoma and its citizens in the medical profession are preparing to meet the challenge of nuclear disaster. To offset any destruction of hospitals in an attack, a dozen 200-bed hospitals are positioned in Oklahoma ready to be set up in an emergency. The State is preparing to construct an emergency center to direct civil defense operations. It maintains warning relay stations linked to the National Attack Warning System.

In 1959, your legislature approved a plan for succession in office of State executive, judiciary and legislative officials so the State would not be without leadership in an attack emergency. The first OCDM survey of a major city to determine its capacity to shelter its citizens from radioactive fallout was conducted in Tulsa, with splendid cooperation from citizens and officials.

To enlarge on a physician's skills and provide more emergency equipment, OCDM and the Department of Health, Education and Welfare are directing research on medical care and treatment of mass casualties. We must have simpler procedures in the management of patients under very adverse conditions, maintain a high level of freedom from preventable communicable diseases, and look for improved methods to combat chemical and biologic agents. We must press for more research on means to minimize the effects of radiation on humans.

OCDM will seek to increase its stockpile of medical supplies and equipment, and to place more emergency hospitals in strategic positions in every State.

The physician's other role in civil defense stems from his position of leadership in the community. He can urge and assist local government to create basic community defenses against the hazards of nuclear attack. Americans have become increasingly aware of these hazards. Many are beginning to understand the importance of fallout shelters. With vigorous leadership at the local level, the public will be ready to take self-protective measures.

Civil defense in the community does not necessarily start with meetings of officials or gatherings at the town hall. It can begin with the family in the home.

Each family can take simple, inexpensive steps to turn the family dwelling into a shelter for survival. These steps are contained in free publications distributed by every local or State civil defense office. Briefly, every family should know and take action on these five fundamentals of home defense:

(1) Know the warning signals and what they mean. A steady blast of 3 to 5 minutes means ATTACK ALERT—TAKE ACTION AS DIRECTED by local government. A wailing tone or short

THE AUTHOR

Frank Burton Ellis, LL.B., Director of the Office of Civil and Defense Mobilization under the present administration, was a New Orleans civic leader and attorney before accepting his present appointment. He was admitted to the bar in 1930 after graduating from Louisiana State University. Elected to the Louisiana Senate in 1930, he served as President Pro Tem for four years; was a delegate to the Democratic National Conventions of 1952 and 1956; and, a National Committee man from 1952-54. Mr. Ellis is responsible for advising the President on the Nation's non-military defense preparedness and emergency readiness programs and is a member of the National Security Council and serves as co-Chairman of the Joint United States-Canada Civil Defense Committee. Memberships are held in the Louisiana State, American and International Bar Associations and the American Judicature Society. He has held various appointments in New Orleans' cultural, civic and charitable organizations.

blasts for 3 minutes means ATTACK—TAKE COVER IMMEDIATELY IN BEST AVAILABLE SHELTER.

(2) Know your community plan for emergencies.

(3) Know the dangers of radioactive fallout and know self-protective (shelter) measures against radiation.

(4) Know how to use CONELRAD—640 and 1240 on your radio dial—for emergency information and instructions.

(5) Know basic first aid.

Physicians and medical personnel, with their knowledge of first aid and disaster precautions, already have mastered a civil defense fundamental.

The most widespread hazard of nuclear attack would be radioactive fallout. The survey in Tulsa was highly encouraging because it demonstrated that protection against fallout radiation exists in many of our large public and office buildings and apartment houses. With some modifications, every basement is also a potential family fallout shelter. The government and private construction firms have developed simple, inexpensive ways of incorporating fallout protection in basements. Free government plans are available at local civil defense offices or by writing Box Home Shelter, Office of Civil and Defense Mobilization, Battle Creek, Michigan.

A National Attack Warning System for the civilian population is on 24-hour alert at all times; it is steadily being expanded to keep pace with weapons developments. The system can now deliver a warning from radar outposts in the Arctic to key points in the 50 States in less than 15 seconds. In addition, OCDM has developed a new indoor system for warning people of impending attack. The system is being installed now in Michigan for final State-wide tests. The heart of the system, called NEAR (for National Emergency Alarm Repeater), is a small buzzer that plugs into any ordinary electrical outlet; it could be sounded by signals sent over a community's power lines. This simple, effective system could provide instantaneous warning wherever power lines reach. It would also have a valuable peacetime use in warning of major disasters such as floods and hurricanes.

Effective civil defense in the community stands on these three elements: Warning, fallout protection, leadership by government in emergencies. I know that the President relies on America's communities to give the Nation a firm foundation for civil defense. In OCDM, our objective, under the direction of the President, is to assure that every American knows the potential dangers of nuclear conflict, and to bring home to every citizen his obligation to prepare for survival and for the survival of his neighbors.

I am deeply gratified and encouraged by the decision of the Oklahoma State Medical Association to assist in this high mission by devoting its entire May *Journal* to civil defense. The members of the Association will find this *Journal* a guide for immediate action to expand civil defense readiness in Oklahoma.

Fallout Shelter Film Released

A 27-minute film showing a simple, step-by-step construction of a basement corner-type masonry block fallout shelter has been released by OCDM for public use. Sponsored by the national Concrete Masonry Association, Washington, D.C., the film should be particularly appealing to economy-minded, do-it-yourself families. It is in black and white, and has been cleared for television. Preview prints are available from OCDM Regions, and State and Territorial CD offices. Local CD directors may borrow prints from concrete block producers in their communities.

Health Services in Wartime

KIRK T. MOSLEY, M.D.

WE LOST 2,638 officers and men killed and 946 wounded at Pearl Harbor—a costly tragedy that catapulted the United States into World War II.

In the next war we could lose a half million Oklahomans—a tragedy that can be prevented.

Our civil defense plan is designed to prevent this tragedy—not to pick up the dead after it happens.

Following the Pearl Harbor attack, the equivalent of martial law had to be established in the Islands. Normal judicial processes were suspended, constitutional rights violated, citizens arrested and jailed arbitrarily, workers were frozen to their jobs and imprisoned for taking a day off. Health services passed under control of the Army, and physicians practiced medicine and surgery "at bayonet point" so to speak; all this because civil authority broke under the impact of a single strike by the enemy.

Those in a position to know believe that any future attack against the United States might come in the form of 50 or 100 "Pearl Harbors," and with as little warning. In our present state of non-preparedness, we would count our dead in millions—not thousands. Those of us who survive would be completely under military control because our civilian society is not organized or disciplined to function under conditions of modern warfare.

The Health Annex to Oklahoma's Emergency Operations Plan outlines procedures by which medical and allied services will function in wartime under their own professional disciplines and without the necessity for military control. This Annex is given the full effect of law by the Oklahoma Civil Defense Act of 1957. It assigns responsibility for civil defense against *all health hazards* to the State Department of Health.

Governor Gary by Executive Order dated July 1, 1958, directed that all State Departments "join in a concerted effort to implement, refine and be prepared to put into effect this Emergency Operations by the speediest and most expeditious manner possible."

Your Department of Health, with financial assistance from the Office of Civil and Defense Mobilization, is giving high priority to this prodigious task.

As an example of the magnitude and complexity of health problems arising from a mass thermonuclear attack, in Operation Alert 1956, a National Civil Defense exercise, there were 25 million casualties of which 19 million died by the 90th day. Forty million displaced persons were forced upon the remaining 100 million population, creating an insupportable supply burden. There were 32,650 casualties among physicians and 55,650 among our nurses. The loss of acute general beds was 37,300 and, in addition, 123,900 were rendered immediately unusable because of radioactivity. There was a loss of 14,400 long term beds and 35,100 additional unusable long term beds because of radioactivity. At that time, there were 1,700 general hospitals in the United States having a 100-bed capacity or greater and containing a total of 44,000 beds. The majority of these were located in metropolitan target areas.

The AMA Committee on Disaster Medical Care feels that, today, in a mass thermonuclear attack, casualties among physicians might reach 100,000, leaving only 160,000 M.D.'s haphazardly distributed among the surviving population, and having very limited facilities for diagnosis or treatment. Doctor Libby's testimony before the House Committee on Government Operations indicated that properly constructed shelters could reduce the area of immediate effects of thermonuclear weapons by 99 per cent, and the casualty area of fallout by 99.9 per cent.

As a means of preventing casualties and loss of facilities in Oklahoma, consideration is being given to the construction of complete underground hospitals, schools, government offices, warehouses, manufacturing plants, and even living and sleeping rooms in private homes. These would be thin-shell reinforced concrete domes or elongated domes, mass-produced at very low cost by processes under study at the University of Oklahoma Research Institute. When this program becomes a practical reality, the magnitude of any war-caused disaster in Oklahoma would be reduced to within our recovery capability.

The underground Annex to the State Office Building is the beginning of this program.

Figure 1 shows the probable fallout deposition area and total gamma dosage in Oklahoma following a typical thermonuclear attack against the United States with 2-megaton weapons. Ten-megaton weapons would cover much larger areas with far heavier dosages. It is estimated that the median lethal dose of external radiation is 450 roentgens received within a period of three to four days.

After a mass thermonuclear strike, most of the population of this state will be pinned down in whatever shelter is available for a period of several hours to two weeks, or more—pending decay of radioactive contamination to a tolerable level. Underground schools and hospitals three miles or more from ground zero will continue to operate without interruption. The Department of Health will work closely with Oklahoma Civil Defense in the underground Annex to the State Office Building, or in our own proposed subterranean office at 3400 North Eastern.

By the time people begin to emerge from shelter the total resources of the state will

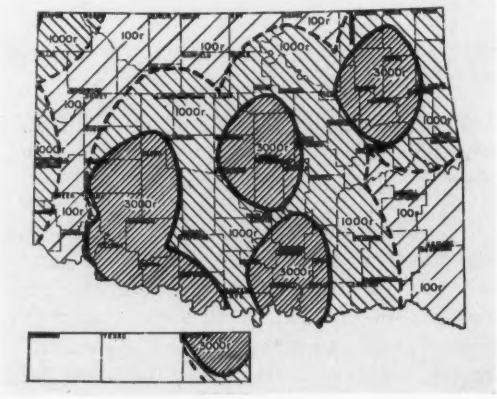


Figure 1

FALLOUT PROBABILITY CHART

Under the Oklahoma Emergency Operations Plan, the above chart is based upon the effects of two Megaton Weapons, exploding as surface bursts in a 30 mile per hour wind. Dark shaded areas represent the concentrated fallout pattern resulting from attacks on such cities as Oklahoma City, Tulsa, Lawton, Wichita Falls, Dallas or Fort Worth.

THE AUTHOR

Following his graduation from Tulane University School of Medicine in 1931, Kirk T. Mosley, M.D., served as a medical missionary in China. After returning to the United States, he received his Doctorate in Public Health from Harvard in 1941. Various positions with the Arkansas State Health Department were filled before Doctor Mosley was assigned to the Preventive Medicine Section of the United States Surgeon General's office. This included service as Theater Epidemiologist in the China-Burma-India Theater and later as Public Health Officer in the Civil Affairs Branch of the U.S. Forces in the China Theater. Returning to the United States, he taught epidemiology in several universities before coming to the University of Oklahoma in 1949. In 1960, Doctor Mosley became Commissioner of Health of Oklahoma. He is also an Associate Dean at the School.

have been mobilized for Operation Survival. Reception areas will have been established and OCDM emergency hospitals set up in priority. Medical supplies will be on the way from storage depots to areas where they are most needed. Radiologic monitors will have reported on the radiation intensity in every community in the state and the State Director will have advised residents via CONELRAD how long they should remain sheltered and what action they should take upon leaving shelter. Mobile field laboratories will cover the state checking potential health hazards.

During this period Oklahoma's Emergency Operations Plan will be implemented and the Department of Health goes out of existence for the duration. It is superseded by the Health, Medical and Special Weapons Services with the incumbent Commissioner of Health in command. These services operate through: 1) the Medical Care Division under command of Doctor William H. Reiff, 2) the Health Protection Division commanded by Doctor Forrest R. Brown, 3) the Supply Division under Mr. Floyd F. Harrington, 4) the Radiological Defense Service under Mr. Floyd Galpin, and a Special Staff headed up by Major Charles W. Dutreau.

The Medical Care Division is subdivided into four branches: Hospital Administration, Dental, Nursing, and Blood Program Coordination.

The Health Protection Division is broken down into Sanitary Engineering, Communicable Diseases, Chemical Warfare-Biological Warfare Defense, and Public Health Nursing.

When organization is completed, every member of the medical and allied professions in Oklahoma will be enrolled in one of these services. Every physician, dentist, veterinarian, nurse, medical technologist, etc., will be a member of a specialized team, or hold a position in the chain of command. Each person will have a primary and secondary mobilization assignment, and know exactly what his mission is.

The organization necessarily must be quasi-military in nature. Physicians and allied medical personnel will be asked to enlist through their own professional societies for emergency service under command of the Chief of Health, Medical and Special Weapons Services in their own county, a man whom they know and trust. County Medical Societies normally will serve as coordinating agencies. Operations and training will be in accordance with policies outlined by the Office of Civil and Defense Mobilization, as set forth in the American Medical Association's Report on National Emergency Medical Care.

Each employee of the Department of Health will have been given a mobilization assignment in advance, and every operation will be coordinated with DHEW, OCDM and the State civil defense agency.

If we all work and plan together under the leadership of the State Civil Defense Director, even though civil authority should break down in other states, necessitating a declaration of martial law, health services in Oklahoma will continue to function without military control—and in a manner that

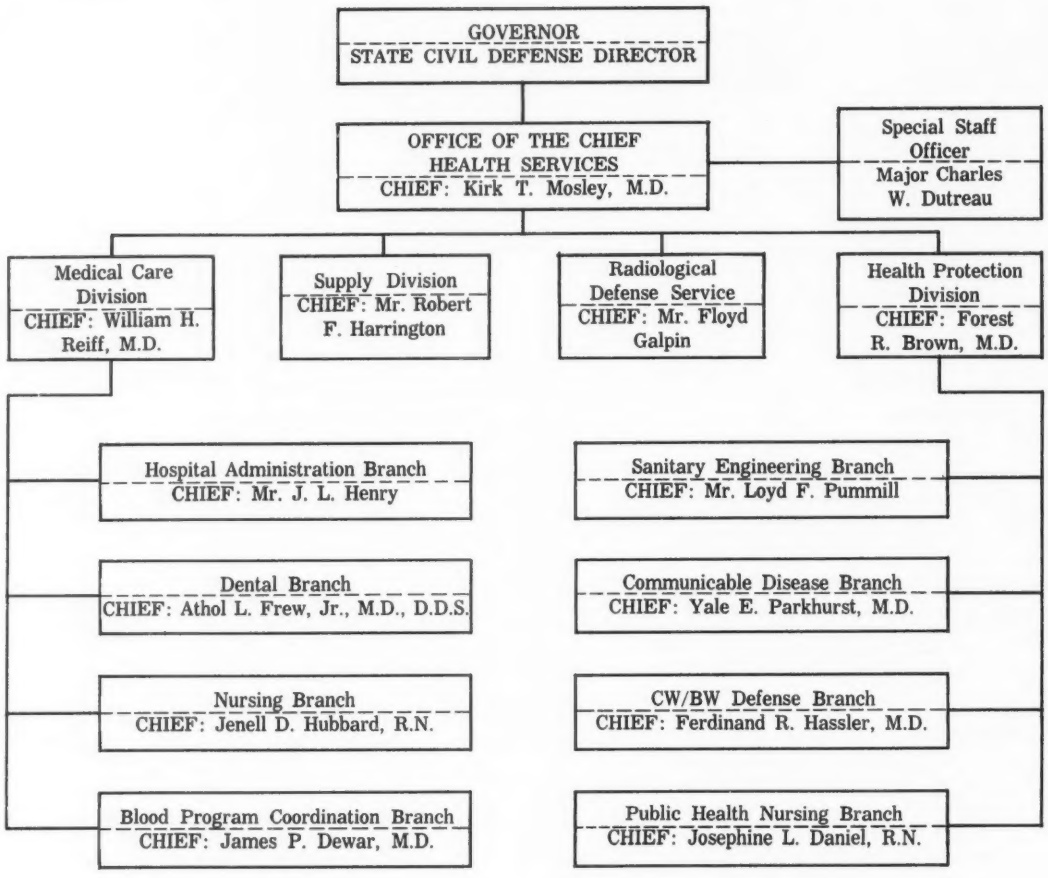
STATE OF OKLAHOMA

Health, Medical and Special Weapons Defense Services

ORGANIZATION CHART

Showing the Incumbent Chiefs of

Divisions and Branches at State Level



will bring honor and credit to the medical and allied professions.

Radiologic Defense

Protection against radiologic hazards is the most prodigious task assigned to the Department of Health by the Civil Defense Act of 1957. It involves implementation of underground construction programs for protection of personnel, planning for the restoration of contaminated agricultural lands to food crop production, examination and testing of food and water supplies for the presence of radioactive contamination, monitoring personnel being admitted to public shelters and hospitals, estimating the radiation dosage received by incoming patients, preparation of fallout prediction charts, the delineation of fallout areas following a strike, determination of actual radiation intensities throughout the state, estimation of the time that residents in each community must remain under shelter, determination of acutal decay rates within each fallout zone, advising the State Civil Defense Director as to the radiologic situation hour by hour, etc. The most important task that faces us in this area is the recruitment, organization and training of some 14,000 dedicated volunteers—people of in-

tegrity and a high degree of emotional stability—who can be depended upon to perform a vital job without pay, sometimes under hazardous conditions.

The Office of Civil and Defense Mobilization has established certain deadlines for the development of an organization and a radiologic defense capability. That agency has laid a requirement on Oklahoma for the establishment of 3,300 fixed radiologic monitoring stations by 1963; each station to be manned by four trained monitors and equipped with two sets of radiologic defense equipment containing six instruments each—to be maintained in operating condition at all times. Instruments will be furnished by OCDM. Maintenance must be provided by the State. Oklahoma Civil Defense and the Department of Health are working together on this assignment. We shall take the liberty to call upon our friends, the radiologists, to assist in our recruiting and training program.

Radio and TV station managers have been very generous in offering free time for an educational campaign to prepare our people for acceptance of this added responsibility of citizenship. Many churches and civic, patriotic and professional groups have pledged their support.

As of now, 42 County Health Departments in Oklahoma are equipped with radiologic defense equipment and have trained personnel to operate it. The State Highway Department has been issued 51 Geiger counters and survey meters which are placed strategically throughout the state in the hands of trained personnel. Complete sets of equipment have been supplied to 113 High Schools and educational institutions for training science students in the detection and measurement of radiation.

City and County Civil Defense Directors are sponsoring the radiologic training program. Most Directors already have quite a number of trained monitors and instructors on their staffs.

As soon as the dust settles following a thermonuclear strike, the State Civil Defense Director must know which areas are free of radioactivity so refugees may be directed to safe relocation sites. Only statewide coverage by fixed monitoring stations can provide this information quickly.

Shelter is the key civil defense measure for protection against radioactive fallout. We feel that a survival plan that does not provide for shelter is of very little value for the reason that—following a mass nuclear weapons attack—not enough people would be left to put it into effect.

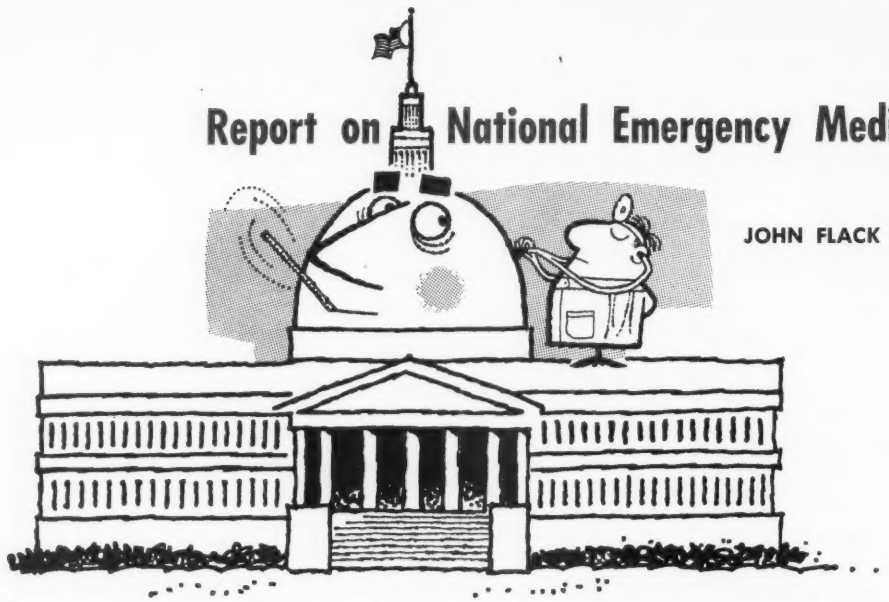
Our state rapidly is assuming a position of national leadership in civil defense, particularly in the area of underground construction and shelter design. Much still remains to be done to assure the survival of the people of Oklahoma in the event of an all out national emergency.

Outdoor Advertisers Aid OCDM Warning System

On January 31, 1961 the outdoor advertising industry pledged the use of 12,000 highway billboards to the Office of Civil and Defense Mobilization for emergency messages. Under the agreement, previously prepared civil defense warnings will be pasted on billboards in 600 key points of the country within 24 hours after receipt of a declaration that an enemy attack is imminent. The signal for pasting up the warning signs, which read "If attack comes, tune radio to 640 or 1240," will be a "strategic warning" from OCDM. It is estimated the message would be visible to 130 million residents of cities of 25,000 or more in all parts of the country.

Report on National Emergency Medical Care

JOHN FLACK BURTON, M.D.



PRIOR TO the successful detonation of the hydrogen bomb in November 1952 and the uranium bomb in February and March 1954, medical aspects of civil defense planning had been concerned primarily with mass casualty care, little or no thought having been given t othe care and treatment of non-casualties.

With the advent of the larger weapons and the knowledge of their vastly increased destructive capabilities, civil defense began to take on a newer meaning—that of national survival with the capability of the surviving population to arise from the ashes of mass destruction and piece together the remaining segments of national economy. Likewise, the medical problem began to assume correspondingly larger proportions in that under this concept, medical care must now encompass not only the treatment and care of mass casualties, but must be extended to include non-casualties as well.

It was with this in mind that on December 11, 1956 the Federal Civil Defense Administration through the Director of its Health office, proposed to the AMA through its Council on National Defense, that under present thermonuclear bomb capacities casualty care per se could not be a single service, but would, of necessity merge into medical care for the surviving population as a whole, casualty and non-casualty. Because of the magnitude of the problem, the F.C.D.A. proposed that the AMA as the representative of organized medicine, become the primary contractor for a study of this problem.

The formal contract was signed July 26, 1957. The contract provided that the AMA "shall study, develop and recommend the planning, training, and operational organization needed as a basis for a National Emergency Medical Care Plan for the treatment and care of casualties and non-casualties prior to, during, and after a hypothetical 20 megaton ground burst thermonuclear attack upon a selected geographical area or areas in the United States."

For carrying out its responsibilities under the contract the AMA created the Commission on National Emergency Care. The Composition of the Commission was as follows:

H. C. Lueth, M.D., Evanston, Illinois, Chairman

THE AUTHOR

A 1923 graduate of Columbia University College of Physicians and Surgeons, John Flack Burton, M.D., limits his practice to his specialty, plastic surgery. He is certified by the American Board of Plastic Surgery and is a Professor of Surgery at the University of Oklahoma School of Medicine. A Fellow of the American College of Surgeons, Doctor Burton is a member of the Council on Medical Service of the American Medical Association. In 1957-58, he served as President of the Oklahoma State Medical Association.

John Flack Burton, M.D., Oklahoma City, Oklahoma

C. P. Hungate, M.D., Kansas City, Missouri

K. R. Lundeberg, M.D., Minneapolis, Minnesota

R. L. Novy, M.D., Detroit, Michigan

H. C. Schwyzer, M.D., St. Paul, Minnesota

Earle Standlee, M.D., Staff Director

Dean Schamber, M.D., Assistant Staff Director

Mr. Thomas G. Boardman, Staff Assistant

National health and medical organizations designated representatives to serve on three "task forces" created by the Commission to facilitate its work. These groups were:

1. Task Force on Organization
   Harold Lueth, M.D., Chairman
   Carroll P. Hungate, M.D., Co-Chairman
2. Task Force on Emergency Medical Care
   John Flack Burton, M.D., Chairman
   Hans C. Schwyzer, Co-Chairman
3. Task Force on Personnel Training and Utilization
   Robert L. Novy, M.D., Chairman
   Karl R. Lundeberg, M.D., Co-Chairman

During the next eighteen months the study groups met many times separately and from time to time all together. Finally on April 15, 1959 the completed report was sent to the office of Civil and Defense Mobilization.

The report embodied the following conclusions and recommendations:

1. A sound national civil defense medical plan is urgently needed.

2. There is at present no national system of shelters or other protective means in the event of an impending or actual mass attack on the United States.

3. Reception areas for the care of evacuees from target areas and population centers have not been prepared.

4. A majority of the industries producing essential medical and surgical equipment are concentrated and vulnerable to destruction.

5. An attack on the United States, with the present lack of preparation or protection, will seriously deplete existing medical resources, including personnel, material and manufacturing capabilities.

6. Under such conditions, the number of casualties will exceed the capabilities of surviving medical resources.

7. Preparation of and protection for the people of the United States against attacks are possible, and will result in fewer casualties and greater national recovery.

8. The medical profession must assume a dynamic leadership in health fields if this country is to be sufficiently prepared to withstand and recover from attacks.

9. Federal civil defense planning, training and operational agencies require assistance and advice from representatives of the medical, health and allied professions.

10. The least possible delay should ensure in preparing the people of the United States for mass casualty conditions.

11. Medical and health personnel should be trained for their duties in post-attack recovery operations.

12. Allied health personnel should receive extensive training in certain remedial and preventive medical procedures to assist in caring for survivors of an attack.

13. The population of the United States should be prepared for mass casualty conditions by a civil defense program of self aid and medical training.

14. Sound mass casualty treatment procedures, policies and principles should be promulgated to assure the greatest good to the greatest number.

15. Sound mass casualty administrative policies should be promulgated to assure the greatest good to the greatest number.

16. Medical and health supplies and equipment, including first-aid materials, should be stockpiled, based on sound estimates of mass casualties and treatment procedures.

This report has been published in its entirety, and, includes sections on medical planning, planning assumptions, the role of the medical profession, expanded function training, training objectives, treatment principles and administrative policies.

The report, which has been used as source material for some of the articles in this Journal, has also been published in summary form, copies of which are available through the OSMA.

Emphasizing some differences between mass casualty management, and normal treatment principles.

Excerpts from the AMA Report on National Emergency Medical Care

Abstracted by
Civil Defense Committee

THE CASUALTY producing energies released by thermonuclear detonations, whether from cannon, rockets, guided missiles, or bombs, are the same—blast, heat, and ionizing radiation. The effects which occur immediately and simultaneously, are augmented by damage from falling structures, secondary fires, and delayed fallout of particles contaminated by radioactive materials. Multiple injuries will be prevalent among the casualties.

Even in the thermonuclear age, the basic principles of surgery remain the same. The Mass Casualty techniques, simply listed in this article, have been taken from the AMERICAN MEDICAL ASSOCIATION'S REPORT ON NATIONAL EMERGENCY MEDICAL CARE. It is realized that some of the points made in this article are covered more fully in other articles in this issue. Copies of the complete summary reports are available from the Office of the Oklahoma State Medical Association.

Mass Casualty Treatment Techniques

I. TRIAGE — the professional medical process of classifying sick and injured according to urgency and types of conditions, so that the *greatest good* can be rendered to the *greatest number* in the *shortest time* within the means available.

Objectives

1. To see that maximum numbers of casualties are restored to effective recovery status quickly.

2. To give appropriate care to each casualty according to established priorities and within available resources.

a. *High priority*: Casualties who after minor treatment can help with recovery efforts of the disaster area. Casualties whose conditions can be successfully treated with the use of small amounts of time, equipment, supplies and personnel.

b. *Medium priority*: Casualties whose conditions (following emergency care) can wait for definitive treatment without detriment.

c. *Low priority*: Casualties with conditions that make recovery seem unlikely.

3. Decrease morbidity and mortality to the extent possible.

Requirements

1. Professional medical skill.

2. Mature judgment.

3. Quick, sound decision-making.

4. Use of mass casualty treatment priorities (of above).

5. Capacity and census of own installation.

6. Expected number of casualties.

7. Capacity, census and locations of other installations.

8. Types, numbers and availability of evacuation vehicles.

9. Knowledge of evacuation routes.

10. Effect of supporting installations in evacuation of casualties.

Results of Triage Failure

1. Waste of time, personnel, supplies, equipment and facilities.

2. Increased disability.

3. Increased morbidity and mortality.

4. Prolonged convalescence.

II. TREATMENT PRINCIPLES—that will do the *greatest good* for the *greatest number* in the *shortest time* within the means available.

General

1. Simplify and standardize treatment procedures.

2. Control of hemorrhage, attainment and maintenance of a patent airway and treatment of shock are lifesavers. They have highest priority always.

3. Render no treatment that leaves a casualty less able to care for himself during the emergency period immediately following disaster.

4. Treat to preserve life rather than limb, and function rather than appearance.

5. Do the work you are most qualified to do.

6. Triage will be a continuing function at all medical installations.

7. Priorities on mass casualties:

a. Priority I—Those requiring outpatient care only.

b. Priority II—Moderately injured and ill whose recovery chances are good following immediate definitive treatment.

c. Priority III—Injured and ill not jeopardized by delay of definitive treatment.

d. Priority IV—Critically injured or ill requiring extensive, complicated, time-and/or-material-consuming procedures.

e. Priority V—Those who are beyond help.

8. Do not admit psychologically disturbed persons to hospitals treating the injured.

9. Do not remove patient from litter or stretcher until he has reached point of definitive treatment.

10. Group similar types of cases together.

11. Hold laboratory procedures to absolute minimum.

12. Hold x-ray examinations to absolute minimum.

13. If possible, blood-typing and matching to be carried out prior to transfusion.

14. Transfer to outpatient status or discharge patients as quickly as possible.

Morphine

1. Morphine and potent opium derivities may be administered only by qualified personnel.

2. Do not issue morphine or other narcotics to rescue workers, litter bearers, ambulance drivers, etc. for use on casualties.

3. Do not administer morphine or other potent narcotics to casualties showing signs of traumatic or hemorrhagic shock.

4. In treating injured personnel, use morphine only for purpose of relieving severe pain. (Since major wounds frequently are quite painless, there is no reason for morphine to be used solely because of the presence of such wounds.)

5. Do not administer morphine or other respiratory depressants to casualties suffering head injuries, severe chest injuries, respiratory depression or distress.

6. Use only the smallest effective doses of morphine when required.

7. Be sure to record the dosage of morphine on each casualty.

Anesthesia

1. During the immediate post-attack phase, anesthesiologists available in disaster and support areas supervise teams of less highly trained personnel in administration of anesthetics.

2. Use smallest of effective amounts of anesthetic agents on mass casualties.

3. Use local anesthetics for casualties with wounds of the extremities.

4. Use ether for most casualties requiring a general anesthetic.

5. Use local anesthetic wherever possible.

General Surgery

1. Direct main surgical effort to casualties suffering fractures and soft tissue injuries.

2. Use airway-to-airway artificial respiration.

3. Sucking wounds of the chest should be adequately closed by first-aid and definitive procedures at earliest possible moment.

4. Use tourniquets only in cases of hemorrhage that cannot be controlled by compression.

5. When using tourniquet, apply tightly enough to occlude arterial blood flow.

6. Do not remove tourniquet until definitive treatment is available. This entails possible loss of the limb.

7. Consider that casualties suffering mechanical or thermal injury have bacteriologically contaminated wounds.

8. Determine absence of sensitivity of those suffering mechanical and thermal injury who are known to have been immunized with tetanus toxoid, and give them booster dose of tetanus toxoid . . . and an adequate dose of antitoxin when necessary.

9. For the same type injuries who are not known to have been immunized with tetanus toxoid, an adequate dose of tetanus antitoxin should be given after determining absence of sensitivity.

10. Four units (2000cc) of dextran should be the maximum administered to any one casualty during the initial phase of treatment.

11. Practice maximum hemostasis in debridement of procedures to conserve blood.

12. In disaster and support areas, traumatic wounds, except wounds of the scalp, face and neck, should receive adequate debridement, be left open initially, dressed with moderate pressure dressings and closed secondarily when circumstances are favorable.

13. Traumatic wounds of the scalp, face and neck should receive adequate debridement, be closed primarily and dressed with moderate pressure dressings.

14. Superficial wounds of the chest should be debrided and left open while open chest wounds should be debrided and closed tightly, with the pleural cavity aspirated or drained.

15. Superficial wounds of the abdomen should be debrided and closed in layers, except that the skin is left open. If exploration of the abdominal cavity is indicated, the approach should not be made through a traumatic wound.

16. Definitive treatment of wounds of the stomach and small bowel consists of closure in accordance with treatment priorities.

17. Definitive treatment of wounds of the upper large bowel consists of exteriorization of the involved area.

18. Definitive treatment of wounds of the lower large bowel and rectum consists of closure, posterior drainage and protection of the wounded area by diverting colostomy.

19. Definitive treatment of the injured spleen consists of removal rather than repair.

20. Definitive treatment of the injured liver and pancreas consists of repair and adequate drainage.

21. The casualty with an injured kidney may be managed conservatively.

22. A torn or ruptured bladder should be treated as a suprapubic cystostomy or closed and protected by an indwelling urethral catheter.

23. A casualty who is unconscious or semi-conscious following surgery should be placed on his side.

24. Traumatic wounds of the joints receive adequate debridement, to include removal of detached bone, cartilage fragments and foreign bodies, followed by irrigation and closure of the capsule, and immobilization if indicated.

25. In all traumatic wounds, bone,

nerves, vessels, tendons and testes should be covered with tissue upon completion of debridement.

Orthopedics

1. Initial amputation procedures should be the open circular type in disaster and support areas.

2. Fractures of the long bones should be splinted prior to movement of the casualty whenever practicable.

3. As a general rule, fractures should be splinted without traction.

4. Casualties who have sustained closed fractures of the small bones and closed fractures of the upper extremities should have their fractures immobilized and be placed in treatment priority I and handled as outpatients.

5. Casualties who have sustained closed fractures of the long bones of the lower extremities should have their fractures immobolized and be placed in treatment priority III.

6. When limbs are splinted, casted or bandaged because of fractures or burns, the joints should be placed in functional position.

7. When the use of plaster is required in the treatment of injured extremities, it should be applied in the form of splints in preference to casts.

8. Casualties who require a splint and traction should have adequate padding applied to those portions of the limb subjected to pressure and circulatory restriction.

9. Plaster casts, when applied to extremeties should be bivalved as soon as the plaster is set.

Ophthalmologic Injuries

1. To the extent practicable, ophthalmologic surgery should be performed by ophthalmologists.

2. Dressings and bandages should be lightly applied to injured eyes.

3. When one or both eyes are severely injured, both eyes should be occluded by lightly applied dressings.

4. Casualties with eye injuries who cannot be evacuated as litter cases should have a pinholed opaque disk placed before the uninjured eye and be escorted by an attendant.

5. The decision to enucleate an injured eyeball should be made by an ophthalmologist, whenever possible.

6. First-aid care of ophthalmologic injuries consists of prompt flush of the eye with plain water, if superficial foreign bodies or chemicals are present, and application of a loose fitting bandage or dressing. Local anesthetics and mild antiseptics, if available, may be instilled into an injured eye to relieve pain and prevent infection.

7. Ointments should not be applied to a perforated eyeball or one with a poorly sutured wound.

8. Casualties with intra-ocular injury, perforating or other serious wounds of the eyeball have a high priority for evacuation as litter patients for ophthalmologic care.

9. Casualties with traumatic intra-ocular hemorrhage should be referred to an ophthalmologist whenever possible.

10. Casualties with foreign bodies in the eye that cannot be removed in two gentle attempts should be referred to an ophthalmologist, whenever possible.

11. Lacerated eyelids should be repaired by an ophthalmologist, whenever practicable.

12. The cornea of injured eyes should be protected from drying. Temporary suturing of lacerated lids or suturing one lid to another to cheek or eyebrow should be employed, if necessary.

Thermal Injuries

1. Use the open method treatment for thermal burns. For ambulatory burn cases, a suitable protective dressing may be applied. Antibiotics will be used in suitable cases.

2. Casualties with second degree burns of 20% or less of the body surface should be placed in treatment priority I and treated as outpatients under mass casualty conditions.

3. Casualties with third degree burns of 40% or more of the body surface should be classified treatment priority IV under mass casualty conditions.

4. In the treatment of casualties from a nuclear blast, medical units screen incoming patients for radioactive contamination.

Radiation Injuries

1. Medical units are responsible for decontaminating incoming patients who are contaminated with radioactive material and maintaining uncontaminated installations.

2. Until there is available an accurate method of estimating or determining the amount of radiation to which personnel have been exposed, the degree of radiation injury sustained by casualties, as a result of a nuclear detonation, should be determined on a clinical basis.

3. Casualties known to have suffered a fatal dose of radiation and those showing early severe signs and symptoms of radiation injury following a nuclear detonation should be placed in treatment priority IV.

4. Since antibiotics are not indicated in the prophylactic treatment of radiation injuries per se, they should be administered to radiologically injured casualties only if other indications for their use are present.

5. Since whole blood is not indicated in the prophylactic treatment of radiation injuries per se, it should be administered to radiologically injured casualties only if they have lost blood.

Disaster Fatigue

1. Use barbiturates as indicated for the relief of apprehension and anxiety. Narcotics are not indicated in the relief of these conditions.

2. Individuals manifesting disaster fatigue should be given psychological first-aid on-the-spot by non-medical personnel.

3. Since most individuals, temporarily distraught as a result of mass attack, will require only psychological first-aid, disaster fatigue cases should be removed to reception areas for temporary housing and feeding only if their ineffective behavior persists subsequent to administration of first-aid.

4. Only those cases of disaster fatigue which fail to respond to simple treatment in reception centers should be evacuated to mental hospitals.

Evacuation

1. No casualty from a disaster or support area should be evacuated to a more highly specialized medical treatment facility than is required by his condition.

2. Do not evacuate those cases whose chances of survival are poor if moved from one medical facility to another.

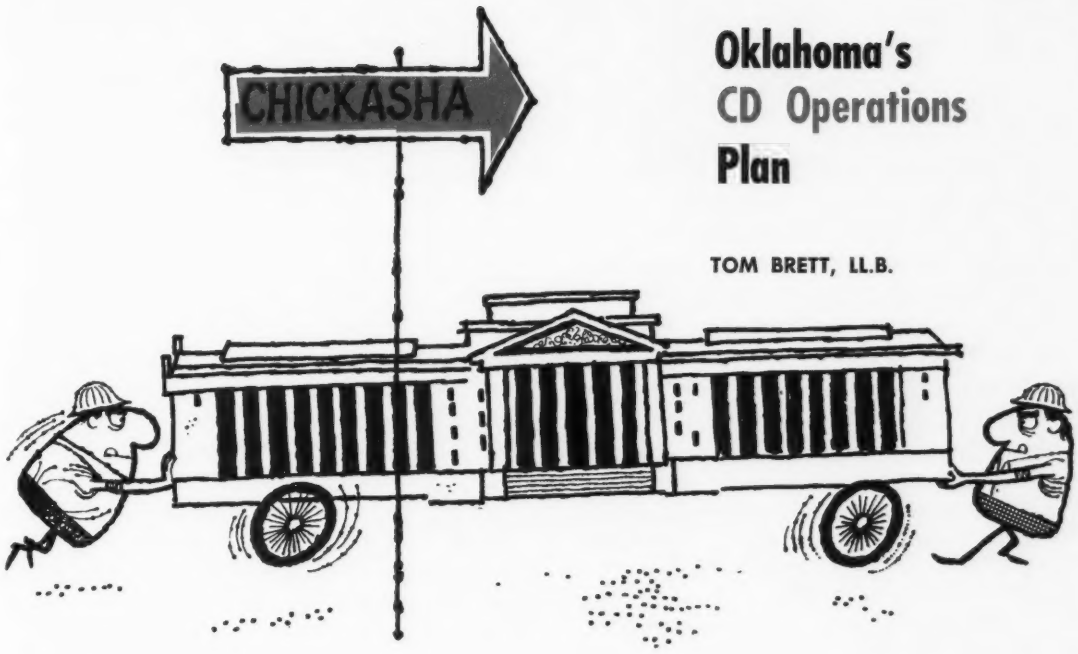
3. Move in prone position those casualties suffering suspected or real fractures of the spine (except of the cervical region).

4. Move in a supine position (with the head adequately supported) those cases suffering real or suspected fractures of the cervical region of the spine.

5. Place unconscious casualties on one side for transportation. This position should be maintained until definitive treatment may be administered. In the event placing a casualty on his side is not practicable, the head should be turned to one side to prevent the aspiration of vomitus and secretions.

6. Unconscious casualties with fracture of the mandible should not be transported if bandaged so tightly or otherwise splinted that opening of the mouth is prevented.

7. Conscious casualties with fractures of the mandible may be transported with the jaws tightly bandaged or otherwise splinted, provided the attendant is so informed and possesses the means to remove the bandages or splinting materials expeditiously.



Oklahoma's CD Operations Plan

TOM BRETT, LL.B.

THERE IS a black and white—and tested—state level civil defense operations plan. Nearly one inch thick, the printed civil defense plan is officially titled, "Emergency Operations, State Government Plan."

Like medical science, the state level CD operations plan undergoes revisions and updating to keep up with the times. At the present time, five of the 23 annexes, which make up the CD operations plan, are being revised because of changing times.

The plan, originally drawn by a special force paid from federal funds, transforms state government into a civil defense unit for the protection of the civilian population, and sets out in detail the functions of the various state agencies during a state of emergency.

However, because of the enormity of the problems involved, drafters of the CD plan found that state agencies, by themselves, could not provide the full force that is needed for complete coverage on a state-wide basis.

The plan relies heavily, therefore, on a similar, all-out civil defense effort by all county and municipal governments, each of which has independent planning to accomplish. It is obvious that these local civil defense programs must be keyed to supplementing the state CD plan. It is generally agreed that the key to a successful CD program lies in the strength of the local civil defense units.

Local CD Guides Prepared

The state civil defense office does not "blueprint" plans for local CD organizations, but a complete "Guide To Local Planning" has been prepared, printed and distributed to local CD directors. The guide was prepared with the cooperation of Grady county officials in 1958, and as the title clearly indicates it is a "guide" and is not a mandatory plan for all local CD units.

Although 100 per cent uniformity would be the ideal situation, state CD officials realize that various differences in different

THE AUTHOR

Tom Brett, LL.B., joined the Oklahoma Civil Defense staff as director of operations in 1952 and became State Civil Defense Director in 1955. A veteran of 20 years military service, he holds the rank of Lieutenant Colonel in the Airforce Reserve. During World War II, he served in the European theatre where he was awarded the Silver Star and the Purple Heart. In 1950, while practicing law in Norman, Oklahoma, he was recalled to active duty with Oklahoma's 45th National Guard Division in Korea. Mr. Brett is a member of the Oklahoma Bar Association.

localities prevent this from becoming a reality in the near future. In some instances, the differences are local statutes, or laws, and in other instances it might be geographical areas. And, in some cases, it is a matter of local leadership.

And, although local plans lack complete uniformity, slightly more than 100 Oklahoma towns do have some form of a disaster, or civil defense, plan of action. The Oklahoma Civil Defense does not advocate elaborate "volume-type" plans, but does urge "a simple plan that is geared to the ever-present natural disasters." If a town can't cope with a natural disaster—then the problem of a nuclear attack is beyond any possible comprehension.

If towns and cities begin with a simple plan, designed for natural disaster purposes, then this same plan can be used as the foundation for a more comprehensive plan for man-made emergencies. Basically, both types of emergencies, natural and nuclear, require the same planning for the major differences in the two types of disasters are "degree and scope." Without adequate civil defense planning, either type of disaster would bring additional loss of lives and property.

With or without completed local CD planning, the state level civil defense operations plan would swing into action as the result of an Executive Order, dated July 1, 1958, issued by former Governor Raymond Gary.

The executive order includes the usual number of "whereas's," but it is clearly defined as meaning, "In the event of an enemy attack, every agency of state government would abandon its normal operation and assume a specific role in civil defense." The state CD plan "spells out" the specific role of each state government agency.

Designed to counteract aggression of the worst proportions, the plan is drawn under assumption that the enemy is capable of striking any community in Oklahoma, and that the aggressor will use, among other things, nuclear weapons of large yield to knock out military bases and centers of population.

In the over-all state level CD planning, considerable emphasis is placed on Tulsa and Oklahoma City because of their military establishments and density of population. Then, too, should these two cities be the only targets of an attack, the impact of their emergency operations would be felt in many other sections of the state with near staggering force.

Eight Targets Affect Oklahoma

Eight localities have been designated as prime targets. Four are in the state. The other four are out-of-state, but near enough to cause possible disaster in Oklahoma in event of attack against them.

These targets are Oklahoma City, Tulsa, Altus and Clinton-Sherman airforce base, all within the state; Sheppard airforce base and Perrin airforce base, both in Texas; Fort Smith, Arkansas and Liberal, Kansas.

Writers of the 300 page—22,500 word plan admitted that suitable shelter was not available in the event of a nuclear attack, therefore, and if warning were sufficient, the answer would be evacuation of the population. County and City governments are held responsible for evacuation of their own citizens—at their own discretion and in accordance with their own plans. The state will lend support. Because warning time has decreased considerably since the plan was written, revisions, now underway will

add more emphasis on "family-type fallout shelters" instead of mass evacuations. These shelters, if so constructed, can double as tornado shelters.

Eight CD Areas

For operational purposes, the state has been divided into eight emergency areas—with each area consisting of several counties. Area headquarters include Oklahoma City, Tulsa, McAlester, Ardmore, Lawton, Clinton, Alva and Woodward. In each instance, alternate area headquarters are listed.

At the present time the area concept is not operational to the point that it could be effectively utilized to combat the effects of a major disaster. Before the area concept can become a working reality, it will be necessary that every county and city complete their local CD plans—for an area plan cannot be fully operational without counties and cities within area boundaries.

Like an automobile, the area plan needs "sparkplugs" and in the civil defense instance, cities and towns are the "sparkplugs."

Who Does What

Actions to be taken by state agencies in the event of emergency vary from moves that seem highly expected to some that appear unique.

An example of a unique assignment is the responsibility of Oklahoma College for Women in Chickasha. If warning is adequate, the college is charged with relocating the seat of state government and the state CD control center from the capitol to its campus.

Although this responsibility is presently charged to the women's college, there is a possibility, based on radiologic fallout patterns, that Oklahoma State University in Stillwater will assume this responsibility. But, in either instance, this is one of the unique planned actions of state agencies.

As might be expected, the Department of Public Welfare is charged with the lodging, food and clothing of distressed persons. This department has very detailed plans. The State Department of Public Safety (highway patrol, etc.) is held responsible for three services: police, communications and warning.

The State Military Department is to head the intelligence phase; the State Highway Department is responsible for engineering problems; the Oklahoma Employment Security Commission is charged with manpower; the State Treasurer to handle fiscal matters and the Attorney General will be responsible for legal problems.

These are only a few of the 23 different phases or responsibilities of an organized civil defense effort. In each instance, the individual state agency has a prepared plan of action. In most instances, an individual agency plan outlines, in detail, the steps that are to be taken in the event of a large-scale disaster.

The Army's Role in Civil Defense

By law, Civil Defense is a civil responsibility, vested jointly in the Federal Government, the states, and the political subdivisions. An adequate civil defense program is vital to national survival in general nuclear war, and to the ability to continue the war to a successful conclusion. Civil defense is an essential element of the general war deterrent. The effectiveness of civil defense depends largely on local and individual effort.

Army support is given to civil defense, both for preparatory, and for emergency roles. In the preparatory phase, such support is rendered to maintain readiness for a civil defense emergency. In an emergency situation, the Army support consists of all aid which can be made available as military requirements permit. In both instances, military support complements, but does not substitute for civilian participation.

Army readiness to execute civil defense emergency support missions is accomplished by contingency type planning which takes advantage of the existing organization, dispositions, and command structure of Army forces, both active and reserve. Army plans support existing civil authority, and assume operational control only when civil authority is ineffective in an emergency.

Specific Army units will not be designated as civil defense forces by pre-commitment or otherwise setting aside certain forces as sources of manpower or supplies, for possible civil defense tasks.

The Army will continue training in civil defense for all units to the extent necessary to assure a capability to execute expected civil defense missions. Training activities include emphasis in service schools, and in all active and reserve units.

The Army is responsible for coordinating the planning for use of military forces, and for controlling military support to civil authorities, for all of the military services.

It would seem that the following are basic:

1. Civil Defense is an essential element of the over-all United States defense posture, and is a CIVILIAN responsibility.

2. Although the Army will take a positive approach toward meeting the civil defense emergencies which exist in a general nuclear war, the PRIMARY MISSION of the Army is the conduct of land combat operations.

3. The over-all responsibility of the Army, relative to civil defense, is to be prepared to conduct emergency operations in support of civil authorities, under conditions of disaster resulting from a massive nuclear attack on the United States. This responsibility also includes coordination of the planning for, and coordination and control of the rendering of, civil defense support provided by the Navy and by the Air Force. The objective of all planning is to ensure a capability for rapid and effective response to civil defense emergency situations requiring military support.

Medical-Radiologic

For two reasons—relationship and willingness—the State Department of Health has two full-time assignments in the state civil defense operations plan.

The State Health Department is charged with HEALTH and RADIOLOGIC aspects.

The mission of the State Health Department is to plan and provide for:

1—Emergency care and treatment of civilians and emergency government casualties resulting from enemy attack;

2—Emergency care and treatment of non-casualty population;

3—Emergency public health epidemiologic and sanitary engineering services under disaster conditions;

4—Preventive and remedial measures against chemical and biologic warfare attack, as well as the minimization of the radiologic effects of a thermonuclear attack;

5—The logistics of medical supply and transportation incident to disaster operations.

Readily noted is the fact that the five missions of the State Health Department include everything, even remotely, related to the medical field. These five missions make up a "man size task."

It might be pointed out here that the plan calls for use of the extensive hospital and clinical facilities, as well as the professional staff, of the State Mental Health Department.

Medical Activities

In reality, and within the health phase, certain activities are intended to be responsibilities of the Oklahoma State Medical Association, the State Hospital Association and the State Nurses Association.

Specifically, the medical treatment phase is intended to be supervised, controlled and implemented by the Oklahoma State Medical Association, the State Hospital Association and the Nurses Association.

The emergency public health requirements —and requirements in chemical, biologic and radiologic fields — will fall directly under the supervision and coordination of the state health department.

For the first time since the plan was prepared, the State Health Department has the services of a full-time civil defense liaison officer. Major Charles W. Dutreau, a retired chemical corps officer, and an original member of the Oklahoma CD training school instructor's staff, joined the State Health Department on January 1 of this year. Civil

defense funds provide one half of his salary and expenses.

At the present time, he is developing appropriate lists of capabilities within the special medical professions. He will then attempt to correlate and coordinate activities of these various professions and specialties, during coming months.

In many respects the state health plan is ahead of other phases of the state CD operations plan, but to maintain this lead there will have to be increased local level CD planning.

At the local level—cities and counties—the development of emergency medical plans is the responsibility of doctors, nurses, hospitals and other medical specialists. In the last year, the greatest advance in Oklahoma, on the local level, has been made in Oklahoma county.

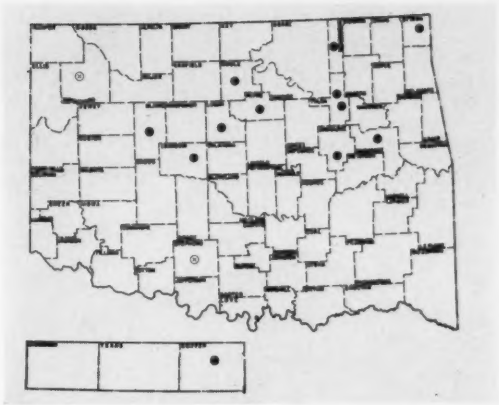
Long the laggard in local civil defense planning, Oklahoma county moved into high-gear during the past 18 months and in doing so passed many other localities. Up to this point, personalities have not been mentioned, but in the instance of medical and health planning in Oklahoma county—it might be well to point out that two medical doctors, William Reiff, M.D., and Joe M. Crosthwaite, M.D., have played leading and responsible roles in forming local CD medical plans.

Equipment and Supply Assistance

In some respects, local medical planners have more aids in completing their plans than do the other civil defense services. With hospital beds always in demand, a major disaster would increase the demand even more and to aid in eliminating this critical problem, 12 civil defense emergency hospitals, 200 beds each—have been stored at different locations throughout the state.

These 200-bed civil defense hospitals are equipped with everything from bedpans to portable x-ray machines. They have self-contained power supplies and are designed to be set up in large areas such as public schools.

On a smaller scale — and scattered throughout the state—are nearly 30 first aid type units, designed for treating up to 300 persons, depending on the types of wounds, etc. These waterproofed and crated units were purchased by the state civil defense headquarters, on a matching funds basis, and are located in Durant, Tulsa, Oklahoma City, Stillwater, Watonga, Okemah, Cushing, Ponca City, Lawton, Okmulgee and Nowata. Other locations include Beaver, Guymon, Fort Supply and Elk City.



200 BED EMERGENCY HOSPITALS

OKLAHOMA	
•200 Bed CD Hospitals	Watonga
Henryetta	Bartlesville
Muskogee	El Reno
Guthrie	Cushing
Tulsa (2)	Perry
Miami	⊙ Proposed Locations
Beaver	Duncan
	Fort Supply

Another aid to local CD medical planning is a resources study listing medical items (in quantity) that are usually in supply houses. This listing is in addition to hospital supplies, drug stores, doctors' offices and clinics.

Examples of the resources study show that normally there are 3,500 dozen hypodermic needles; 15,000 quarts of intravenous solutions; 200,000 pounds of absorbent gauze; 10,000 feet of rubber tubing; 100,000 razor blades; 1,200 pairs of surgical gloves and many other items essential to the medical profession.

Being aware of available supplies, locations of CD 200-bed hospitals, locations of the crated first aid units and all other available supplies and equipment—members of

A display of the professional equipment and supplies contained in a 200 bed Civil Defense Emergency Hospital is shown above. The numbered items in the photograph are: (1) Receiving Station; (2) Portable X-Ray; (3) Ward Supplies and Equipment; (4) Operating Room; (5) Laboratory; (6) Central Supply; (7) Sterilizing.

the medical profession then must join with local civil defense directors and prepare local CD medical, or health, plans.

They should designate assembly sites and alternate sites. They should take advantage of Red Cross trained first aid workers and group them into teams of four or six, for they will need the additional assistance of these trained persons.

They must make arrangements to supplement the normal number of ambulances with the use of stretcher-equipped bread trucks and similar vehicles. Pre-disaster, or civil defense, planning should include "means of identification of authorized personnel in damaged areas."

A local disaster plan for medical purposes might be described as, "Who does what, where, why and how in the event of a large-scale disaster." Whether the plan is simple or comprehensive—these questions must be answered.

When the plan is completed and all persons concerned have been informed of their spective roles then one factor remains before the local CD plan picture is complete. "The plan, regardless of how well written, must be tested. Like a ship, 'there must be

a shakedown cruise to eliminate bugs'." Then, too, if the plan is never tested no one will know for sure if it will work. Disaster conditions must be assimilated and plans tested, otherwise it will almost be wasted time.

As mentioned earlier, the state operations plan is 22,500 words long, therefore, this article should not be construed as the state plan—but it is a general and basic description. Local civil defense directors have copies of the OFFICIAL GUIDE TO LOCAL CD PLANNING, based on studies conducted in Grady County. These local CD officials should have provided county medical associations with the annexes that govern medical aspects.

Records in the state civil defense headquarters reveal 315 "names" serving as local CD directors. As indicated by the quotation marks—some of the local CD directors are merely "names," but in most instances they are active, hard-working and dedicated individuals—trying to do a job.

It might be that they haven't had an opportunity to contact your county medical association, therefore, it might be to your advantage — and certainly theirs — for you to contact your local civil defense director. Your contact might be the igniting spark for an active civil defense in your county or city.

Packets, Films For County Medical Societies

A specially prepared packet of basic civil defense publications is available upon request. In this instance, we have reference to "handout types." This packet contains slightly more than 20 different pamphlets describing everything from Tornado Precautions to Facts About Fallout Protection.

These are suitable for your regular meetings. We suggest that County Medical Association CD chairmen request a packet, review the different publications—then request an allocation of only those publications they feel necessary or interesting for each member. These publications are free of charge.

FILMS

The Oklahoma State Civil Defense Office has the largest CD film library in the southwest. These films, like publications, are yours for the asking. No rental fees, only return postage is required. Naturally, films must be returned promptly.

If you desire a copy of the 1961 Oklahoma CD film catalogue, please let us know.

If you desire films, publications or some form of assistance, or guidance, address your correspondence to:

OKLAHOMA CIVIL DEFENSE
P.O. Box 3365
Oklahoma City 5, Oklahoma

Preparation for Disaster

ROBERT G. JOHNSTON
Colonel, USA—Retired

Civil Defense is an expression that has come to mean different things to different people. Actually Civil Defense is a program of planning, education, organization and training to prepare the citizens and their local governments to withstand a massive nuclear attack and to be able to fight back and preserve our Nation and our Way of Life. Developments of faster delivery means and the increased power of the weapons during the past few years make it abundantly clear that unless the citizen and his local government are prepared to be self sufficient, at least in the first few weeks after an attack, the toll of human destruction will be fantastic.

Fortunately there exists in our society the means both for protection and recovery. There are some fundamental concepts that should be recognized.

a. Everyone who survives the blast can live if they will do those things that are recommended.

b. Governments at all levels must plan and organize now so that they can absorb the shock of nuclear disaster and continue to function.

c. The military will be so busy fighting the war that local governments must not expect assistance from them.

d. The first priority of all agencies of the Federal Government will be those functions that immediately contribute to the war effort, i.e., restoration of industry, transportation, etc.

e. Every function of government that exists in time of peace will be required in the event of a nuclear attack. Some activities will assume greater importance, and must be augmented by trained auxiliary personnel.

f. Fortunately, most of those activities and services that are not in the governmental organization exist in our society. The medical profession is the best example and incidentally will have the greatest work load.

The National Civil Defense Plan states the mission succinctly and clearly.

1. Protection of life and property by preparing for and carrying out non-military functions to prevent, minimize, repair and recover from injury and damage.

2. Mobilization and management of resources and production.

Planning for the mobilization and management of resources and production has made good progress at the national level. Planning at the county level is deficient. However, all of the utility companies have plans that are applicable for any disaster. The large industries either have plans or are now developing them.

The problem of preparation for the protection of life and property is the most difficult since the effectiveness of the program in this area requires an awareness on the part of the citizens of the need for Civil Defense and their willingness to accept their share of the responsibility for survival. This indicates a sizable task for education and training.

The National OCDM is stressing "Home Preparedness" and in consonance with the policy the major effort is now being placed on training in "Home Preparedness." A course in Basic Civil Defense of ten hours duration is being offered. At the last session of the course the "Home Preparedness" Program is introduced and the need for First Aid Training is emphasized. More than three hundred have completed this basic course and there has been a marked increase in the Red Cross First Aid Courses.

In no sense am I minimizing the magnitude and difficulties that will confront each government agency or service, for there are no "small jobs" in a disaster, unquestionably the greatest and most complex of all will be the problems confronting the doctor. This problem will be immediate and will also extend over considerable time.

From experience gained by working in several major disasters, it is my observation that more people become ill or are injured after a disaster has struck than are injured during the incident itself. Add to the usual diseases that plague a disaster area, the insidious menace of radiation born by fallout, and the potential problem is indeed formidable. The area damaged by fire and blast will be considerable and will certainly contain all the elements, plus radiation, to produce immediately inordinately large numbers of casualties followed by the spread of diseases common to disaster areas. Serious as this is, the greater danger to the most people is from radioactive fallout. Yet everyone who survives the blast can live if they will do those things that are recommended. The failure of the population to heed the warnings and instruction will increase the number of casualties and thereby place additional burden on the medical profession.

In view of the continuity of government concept, it follows then that each local government from the smallest village to the largest city must develop plans to utilize all the personnel and resources available in the event of disaster. Some governments have plans in being and others are in process of development.

Although progress is being made in developing plans by local governments, indus-

THE AUTHOR

Prior to his assignment in 1954 as Chief of the U.S. Army Military District, Oklahoma, Colonel Robert G. Johnston, USA (Retired), served in Japan as a Post Commander and was Chief of Staff, Southwestern Command. His first military service was with the Iowa National Guard in 1921. In 1935, while serving with the Civilian Conservation Corps, he was recalled to active duty. At Fort McClellan, he served as company and battalion commander and later as Regimental Executive Officer. In 1944, he organized and commanded a regiment in the Infantry Advanced Replacement Training Center at Camp Livingston and later became S-4 of the Center. From 1945-47, he served in the Philippine Islands as Assistant G-3 and was then Director of Security and Training of the Philippine Base Command. His decorations include: Legion of Merit, Commendation Ribbon, Asiatic Pacific, American Defense and Philippine Liberation and Occupation Ribbon. He was appointed Oklahoma County Director of Civil Defense in 1959.

try and organizations outside of government have made more progress, especially the utilities and large industry. The outstanding example in Oklahoma County of preparation to meet disaster has been done by the Oklahoma County Medical Society. Their Disaster Committee has written a Disaster Plan that is simple, practical and comprehensive. It has been tested and it *WORKS*. This is a splendid example of the discernment, public spiritedness and selflessness that typifies the medical profession.

It is no suprise to me that the medical profession should set an example in the preparation for disaster in Oklahoma County. During many years of military service my experience is that the doctor is always devoted and genuinely concerned about his fellowmen. Fortunately, I learned early in my career that the doctor could and would give me the advice and support needed to keep my troops in good health and effective. Always his advice or actions were based on the facts as he saw them and probable results. Both my professional and personal experiences cause me to have the deepest respect for the medical profession. An accolade to all members of your profession.

Our planning must provide for giving the doctors a chance to work and supporting them in every way possible if the survival effort is to succeed.

This 200 bed emergency hospital is assigned to Oklahoma City Civil Defense for disaster use. It is completely staffed by trained members of the Oklahoma County Medical Society under the leadership of Doctor John Hubbard. The hospital is functionally packed with perishable items stored in local hospitals on a rotating basis. This unit also serves as a training unit for 12 similar hospitals pre-positioned across the State. These hospitals are all under the control of OCDM Region 5, Denton, Texas.

The American Red Cross Role in Civil Defense

ROBERT L. ESSMAN

WITH THE approaching spring season of potential floods and tornadoes in the midwest, Civil Defense and Red Cross workers are anxious to have the public informed as to the nature of these two major disaster relief organizations, and the responsibilities each will fulfill when disaster strikes. Before proceeding, a distinction must be made between "natural disaster," one caused by natural elements of weather and fire, and including such catastrophes as train wrecks, explosions, etc., and "enemy-caused disaster," associated with war.

In a natural disaster, the Red Cross provides assistance under authority of its Congressional Charter. During the emergency immediately following a disaster, Red Cross gives food, clothing, shelter, and medical care, on a "mass care" basis. Following this relatively brief emergency period, Red Cross concentrates on helping families and individuals make their own rehabilitation plans and then providing assistance on a basis of need. This help usually takes the form of food, clothing, household furnishings, repairing and rebuilding homes, occupational supplies and equipment, and medical care. Red Cross help in the last category has

THE AUTHOR

Robert L. Essman is State Relations Representative in Oklahoma for the American National Red Cross, with headquarters at the organization's midwestern area office in St. Louis. Prior to this appointment, he was Red Cross Field Representative in Illinois. Appointed to the Red Cross National Staff in 1953 as an assistant field director, he spent two years in the Far East. On his return to the states, he joined the Disaster Service in the midwestern area office. Mr. Essman has served in many disaster stricken areas, working with individual families in dispensing Red Cross aid to victims of flood, tornado and other natural catastrophies. In addition to these disasters, he assisted in the work at Camp Kilmer, New Jersey in rehabilitating the Hungarian refugees who came to this country as a result of the uprising against communistic rule.

An exercise in mass feeding under austere circumstances.

First aid instruction is a regular Red Cross function.

changed over the past several decades in proportion to improving community medical facilities throughout the country. Today Red Cross medical care consists of first aid teams, fresh supplies of blood from Red Cross regional blood centers, nursing service, and financial aid for disaster inflicted injuries. All Red Cross assistance is an outright gift with no obligation to repay.

At the very outset of a natural disaster, elements of local, state, and federal Civil Defense go into action, using CD personnel and appropriate government departments to rescue victims, protect lives, guard health and property, and restore public works.

Long standing public laws and local agreements have defined the roles of Red Cross and Civil Defense in both natural and enemy caused disaster. These agreements have created a close, cooperative working relationship, and have assured that there is no conflict or duplication of effort on the part of the two organizations.

In Oklahoma such an agreement was revised in April, 1960. This concise document stipulates that The American Red Cross will assist Civil Defense in the training of CD workers and the general public in first aid, training in home care of the sick and injured, and training nurses aides. It calls for Red Cross to make available chapter volunteers and resources for participation in CD defense activities.

During a natural disaster, the agreement provides that Red Cross will continue to carry out its traditional services, i.e., emergency "mass care" and long-range rehabilitation of families. The agreement continues:

"Government agencies shall continue to assume their normal responsibilities in the protection of lives and property, the provision of their usual community services, and the restoration of public property."

If a natural disaster is declared an emergency by the Governor, however:

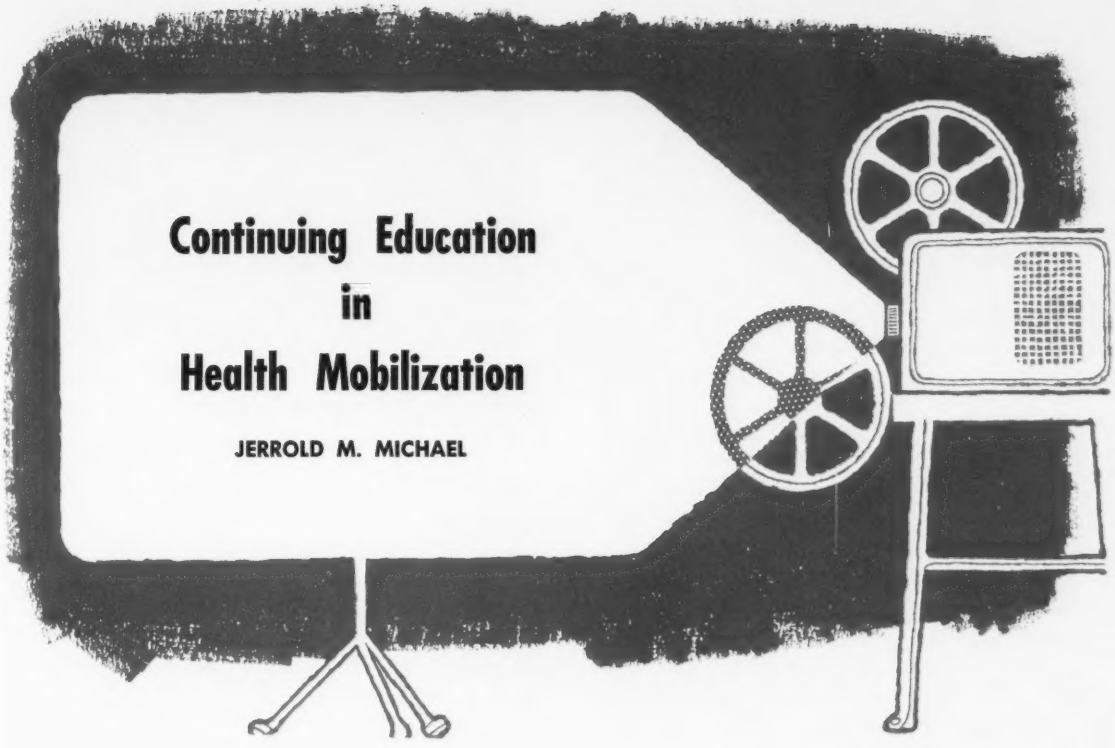
"He (Governor) may delegate over-all coordination of all resources to the Civil Defense Director."

In this case, the agreement states:

"The Red Cross will discharge its responsibility in cooperation with jurisdictional governmental authorities but will exercise administrative and financial control over its own operations."

In the event of an enemy-caused disaster, the agreement declares that Civil Defense will exercise complete control of operations and be responsible for all financial commitments. Civil Defense will utilize all State and community volunteer resources, including available Red Cross personnel and supplies, in carrying out this responsibility. All personnel taking part in such activity shall be considered Civil Defense personnel.

The effects of enemy-caused disaster are similar in many respects to those of natural disaster: large numbers of people are suddenly plunged into a state of helplessness, communications and community patterns are violently disrupted. There is an urgent need for food, clothing, shelter, and medical care. By virtue of years of experience in handling this type of situation, Red Cross can make a highly significant contribution. In coping with disaster, however, and especially in anticipation of enemy-caused disaster, recovery will demand the highest degree of training, and coordination of total resources. Swarms of spontaneous but sincere offers of help are a poor substitute for trained volunteers carrying out a pre-conceived disaster plan. In event of enemy attack, anything short of this could mean the extinction of our country.



Continuing Education in Health Mobilization

JERROLD M. MICHAEL

Introduction

THE MOBILIZATION of our country's health resources is a tremendous task. One of the major elements of this task is training. Under assignment by the Office of Civil and Defense Mobilization, the Department of Health, Education, and Welfare has the responsibility for planning and guidance in Emergency Health Services for civilians. In the field of training, three program areas are involved:

1. Training health manpower in professional and technical content of health mobilization.

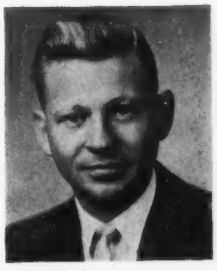
2. Developing health education materials for inclusion in curriculums of schools and colleges, ongoing training programs, special training programs, and professional schools.

3. Developing health mobilization information for voluntary agencies, professional groups, and the public.

The Goal

The goal to which our health mobilization effort is directed is for the population surviving a national disaster to be able to meet its health needs with resources at hand. Training is a vital, and perhaps the most vital, segment of that effort.

THE AUTHOR



Jerrold Mark Michael, chief of the Public Health Service training branch, division of health mobilization, is a senior sanitary engineer. He received his Bachelor of Civil Engineering in 1949 from George Washington University, and Master degrees from Johns Hopkins and the University of California. Mr. Michael served with the Public Health Department of Phoenix, Arizona prior to joining the U.S. Public Health Service as a training consultant with the communicable disease center in Atlanta.

Training Objectives

There are two major objectives in our training plans. The first is the development of methodology by which every individual in our country may be trained to meet his own health needs, either through self-help or neighbor-help in the event of a national disaster.

The second objective is to develop capabilities of the community to meet its own health needs, using its own resources in the event of a national disaster. To this end, the health professions including physicians, dentists, veterinarians, nurses, sanitary engineers, pharmacists, technicians, and others may require training in order for them to be able to assume responsibility and function in health and medical areas beyond those in which they normally function in peacetime. For instance, post-attack the clinician may have greater responsibilities in community health, while the nurse may have to assume greater responsibility in medical care.

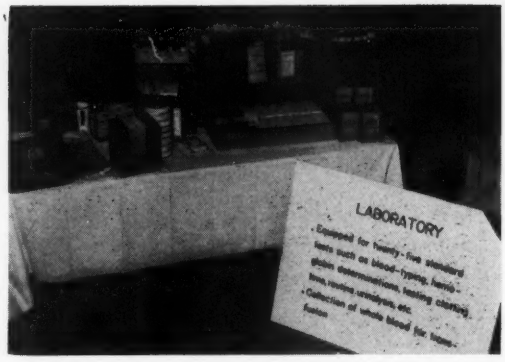
However, to be most effective, specific training should be related to the post-attack organization for health operations.

The Three-Step Approach

Three basic steps are required to get the training to the *community* and the *individual.*

First of all, the Public Health Service itself, required continued inservice training to become oriented to the needs of the community for emergency health services. This includes not only the philosophy of the health aspects of civil defense, but also for some, the technical details of program responsibilities. As an example, Public Health Service staff members need to become expert not only in the content and layout of the 200-bed Civil Defense Emergency Hospital, but also in the most efficient methods of instructing others in its setup and operation. Step one, therefore, is the development and maintenance of a capability of the Public Health Service itself.

Step two is to make use of the commissioned reserve officers of the Public Health Service as well as other selected health personnel to form a cadre that can, among other duties, assist in community planning and training.



The laboratory unit of a 200-bed civil defense hospital is pictured above.

By training this cadre, a corps of knowledgeable health workers is developed who can be called upon to assist a local community with the conduct of instruction courses as well as operational programs. The training of this cadre group accomplishes two purposes. It establishes a group of professional health workers who can accept additional health-related responsibilities in the event of a national disaster, and it provides a cadre of trainers who can be called upon to pass this specialized knowledge to professional organizations and the lay public.

The third step in the program of education and training involves local professional groups, State and local governmental agencies, and through them, the general population, through the development and distribution of training materials and programs.

Hospital personnel are shown conducting an exercise in the use of emergency hospital equipment.

First Phase of the Training Program

The first phase of the training program in health mobilization was initiated with the presentation of three baseline training courses in April, May, and June of 1960. A total of over three hundred health services personnel participated in these courses entitled, "Health Services Aspects of Health Mobilization," in Brooklyn, New York; Battle Creek, Michigan; and Alameda, California. The professional disciplines represented included physicians, dentists, veterinarians, nurses, pharmacists, sanitary engineers, sanitarians, and other health services personnel.

The training manual developed for these courses covers such topics as "expanded function" medical care by allied medical personnel, instruction techniques designed to

X-RAY
•Radiography and fluoroscopy
•Designed for determination of fractures, foreign bodies,and dislocation
•Polaroid Land 60 second process for quick readings
•No darkroom needed
•Generator supplied for emergency use

The portable x-ray unit of a Civil Defense Hospital receives much attention from P.H.S. instructees.

equip students with the tools and methods of teaching community health services such as epidemiology of disaster; communicable disease control measures; emergency water supply and wastes disposal; and radiologic, chemical, and biologic protection including survey techniques, hazards, and therapy.

It was anticipated that those who attended these courses would take back to their communities the knowledge they gained and the enthusiasm engendered. We see in them valuable instruments of assistance to the national defense effort.

Second Year of Activity

During this second year of activity of the Division of Health Mobilization, we will continue to offer this baseline training course on a nationwide basis as well as on a state level basis in as many states as money will permit. State level presentations will be made through our staff and facilities at the Communicable Disease Center of the Publice Health Service in Atlanta, Georgia.

The Division of Health Mobilization Training Branch is currently developing four courses scheduled for Fiscal Year 1961. The first of these is a specialty course for hospital administrators; the second is for registered nurses; the third, for environmental health personnel, and the fourth course is a repetition of the basic health mobilization training for physicians and related health professions which was introduced last April, May and June. All of these courses are intended for individuals in administrative, supervisory, consultant or teaching positions, since these are the groups that are most likely to be or to become, involved in planning or developing further health mobilization programs, or in teaching or giving consultation or assistance in similar training, in the future, to state or local groups.

All of these courses will cover basic civil defense concepts, current information on biologic, chemical, and radiologic warfare, and community disaster planning. Emergency services training will include the setup and operation of a Civil Defense Emergency Hospital, treatment of water to make it safe for use, decontamination of food, mass casualty care, and medical self help.

There are no tuition fees for students, lodging is provided at a nominal cost, and approximately one-half the necessary travel expenses can be reimbursed through OCDM student training expense funds. Enrollments are limited to permit proper student-faculty ratios. Applications are to be made through State Civil Defense Directors.

By offering these specialty courses on a national level with participation by many national leaders in their fields, it is hoped that capability for producing similar courses at the state and community level will be developed.

Concurrent with the development of courses is the development of training tools.

Training manuals and audio-visual aids are important tools currently in the developmental state. These guides for training will cover the areas previously mentioned.

Moulages, manikins, and models are being acquired and developed in order to provide training devices necessary to bridge the gap between classroom instruction and field experience.

Finally, a wide selection of lecture materials is being developed to help support regional and local level training and orientation sessions.

State level training programs resulting from our initial baseline presentations are also being scheduled. The first two of these were presented by the State of Virginia in Charlottesville, November 9-11, and by the State of Kentucky in Frankfort, Kentucky, January 24-26, 1961. Others are to be scheduled in West Virginia, Delaware, Georgia and Idaho in the near future.

You will recall that the first objective in training was the development of methods to train the individual to meet his own health needs. Toward this end, the Medical Self-Help Training Section of the Training Branch, Division of Health Mobilization, has been set up in Atlanta, Georgia. This section is busily engaged in developing the means to provide every citizen in the United States with the necessary information for individual and family survival in nuclear war or natural disaster. The results of their studies will be available in July of this year.

Summary

In summary, the training goal of the Public Health Service in the field of health and medical aspects of civil defense is the development and implementation of a training and education program which will complement the health services operational activities and thus permit fulfillment of assigned emergency health services responsibilities.

Health Mobilization Courses which have been held during the Fiscal Year 1961 are:

1. Health Mobilization Program for Emergency Hospital Management, December 4-9, 1960, OCDM Eastern Instructor Training Center, Brooklyn, New York. (This course carried professional endorsement of the American Hospital Association.)

2. Nursing Aspects of Health Mobilization, April 23-28, 1961, OCDM Staff College, Battle Creek, Michigan.

3. Environmental Health Aspects of Health Mobilization, April 23-28, 1961, Battle Creek, Michigan.

4. Health Services Aspects of Health Mobilization, May 7-12, 1961, OCDM Eastern Instructor Training Center, Brooklyn, New York.

Further information on training courses and other Health Mobilization activities may be obtained from State Health Departments or Civil Defense Offices; from Regional Offices of either the Department of Health, Education, and Welfare or the Office of Civil and Defense Mobilization; or from the Division of Health Mobilization Headquarters in Washington, D.C.

Preparation for meeting the emergency health needs of the Nation obviously requires extensive concentrated activity by every individual and every organization concerned with the welfare of the Nation.

Removing Radioactive Contaminants from Water

The Sanitary Engineering Branch of the U.S. Army Engineer Research and Development Laboratories reports favorable results in tests of three methods for removing radioactive contaminants from drinking water supplies. The equipment for the tests consisted of a standard purification unit known as an Erdlator, a mobile ion exchange unit, and an electrodialysis demineralization process. The experiment was conducted at the Nevada Test Site, with the Office of Civil and Defense Mobilization participating. (Army Information Digest, February, 1961)

Medical Education for National Defense

JAMES P. DEWAR, M.D.
L. V. SCOTT, Sc.D.

THE MEDICAL EDUCATION for National Defense Program, commonly called MEND, began in the fall of 1952, as an experiment in education in the colleges of medicine at Cornell, Buffalo, Illinois, Vanderbilt, and California (San Francisco) Universities. By 1961 it had been extended to include 82 of the 87 colleges of medicine in the country. The University of Oklahoma joined the program on January 1, 1958.

The aim was to improve and extend the teaching of military and disaster medicine in the undergraduate medical schools. This aim was to be accomplished by demonstrating the application of the principles of medicine and surgery to military and disaster situations, and by giving faculty members an opportunity to learn of current work conducted in their particular fields by the various Federal services.

The MEND program is a function of the MEND Program Sub-committee of the Association of American Medical Colleges in cooperation with certain Federal agencies. These governmental agencies include the Department of Defense (U.S. Army, the U.S. Navy and the U.S. Air Force), the U.S. Public Health Service and the Office of Civil and Defense Mobilization. The policy of this program as outlined b ythe above agencies consists only of general guidlines, however, and does not attempt to prescribe a standard MEND curriculum for any of the participating schools, resulting in some variation.

On a national level the program is administered by Capt. Bennett A. Avery, M.C., USN, as National Coordinator, and Mr. Ralph Hirsch as Administrative Assistant. On a local level the program is administered by a Coordinator and an Associate Coordinator appointed by the Dean of the Medical School. They are in touch with the office of the National Coordinator, which is located in Washington, D.C., and can draw on it for such advice and assistance as may be needed. The program in the various schools is implemented by funds received from the Federal Government, and administered through the Office of Naval Research.

During the present crisis which has hung over us for the past decade or more, as a threat to our very existence, it was determined that the mission of the ROTC program in medical schools, for many reasons, was not being fulfilled. And yet, in a broader sense, a new program to integrate or incorporate the principles of military medicine into the undergraduate medical curriculum was needed. Hence the MEND program was formulated and put into action. The spread, from the original five medical schools in 1952, to 82 such schools in 1961, testifies in

*From the Departments of Pathology and Microbiology, University of Oklahoma School of Medicine.

THE AUTHOR

A graduate of McGill University Faculty of Medicine, James P. Dewar, M.D., is certified by the American Board of Pathology and is Professor of Pathology at the University of Oklahoma School of Medicine. He is a member of the College of American Pathology, the American Society of Clinical Pathologists, the New York Academy of Science and the Oklahoma Association of Pathologists. Lawrence Vernon Scott, Sc.D., graduated from Johns Hopkins University in 1950 and is now Professor of Microbiology at the University of Oklahoma School of Medicine. He is a member of the American Society for Microbiology, the New York Academy of Science, the Oklahoma Academy of Science, the American Association for the Advancement of Science and Sigma Xi.

itself to its success. But what are the reasons for its success? The reasons for this success lie in the objectives and the manner in which these objectives are reached. Primarily, all personnel, especially medical students and the younger physicians, must be made aware of the grave dangers facing this country not only from potential enemies abroad but from civil disaster at home. The impact of these possible disasters on communities, large and small, must be fully appreciated. Surely the medical profession must be in a position to take the lead to minimize suffering and death. The objectives are accomplished by integrating into the medical school curriculum, in accordance with the philosophy of the individual university, certain principles in military medicine which are learned at symposia. The National MEND Office allows complete freedom in the manner in which this is accomplished. Most schools do not have a single course or group of courses which can be identified with MEND. Rather, they attempt to infuse into the regular curriculum, both pre-clinical and clinical, the relevant experience from military and disaster medicine. In this fashion, problems of "submarine medicine" or "acceleration" may be studied in a course in physiology; "toxic effects of rocket fuel" may be considered in a course in pharmacology; "war wounds" may be among those dealt with in a course in surgery; and so on. Similarly, the formation disaster plan in a teaching hospital of a medical school can be expected to benefit greatly from the Army's experience in the "management of mass casualties."

At the University of Oklahoma this is done by inserting pertinent information into the present curriculum without altering or changing the curriculum in any way. New material is merely integrated into existing courses by the Medical School Faculty. As an example, a lecturer on the Pathologic Changes in Irradiation Damage would stress the hazards and effects of "fall out" to the relative doses of irradiation which produce damage or death in addition to the findings in such an injury.

Since the philosophy of the MEND program is one of education, instruction of the faculty becomes perhaps the most important aim. Symposia, generally four or five a year, are sponsored by one or more of the various branches of the armed forces or governmental agencies named above. All faculty members are urged to participate. These symposia cover a wide range of subjects varying from outer space medicine to submarine medicine and are conducted on an advanced learning or faculty level. By attendance, each faculty member is made aware of modern military medical and surgical advancements. Faculty participation in this phase is perhaps the most important aspect. However, the latitude of the program is wide enough so that faculty members can be sent to other meetings or seminars which deal primarily with subjects important to the national safety such as trauma, burns, epidemiology of infectious diseases, and biologic and chemical warfare. In addition, guest speakers are brought to the School of Medicine in Oklahoma City, where the faculty and students alike can attend the lectures. Attempts are made not only to bring well known authorities to a combined student and faculty group, but also to the various departments. The MEND program is implemented in many other ways such as the distribution of scientific pamphlets and books, the purchasing of pertinent library books, and weekly movies on MEND and related subjects.

In summary the MEND program has, as its name implies, education at its very core. It attempts to familiarize the medical student with the current problems facing the nation and to prepare him for more effective military service. His mind is oriented to the necessity of triage, evacuation and medical care of the injured in mass casualties. During this time he must be prepared for any upgrading of personnel due to shortage. The purpose is not to make military officers but to make recent advances available to students so that when the young doctor is called into the armed forces the development of young officers is made easier. MEND is neither a recruiting agency nor a manpower pool, but an educational program which will better fit the young physician to assume his position of responsibility as a citizen. This program is accomplished best by integrating pertient information into the teaching material of the medical student curriculum.

Triage or Sorting of Casualties

JOE M. PARKER, M.D.

Joe M. Parker, M.D., graduated from Washington University School of Medicine in 1938. In addition to his private practice, he is Associate Professor of Surgery at the University of Oklahoma School of Medicine.

Doctor Parker served with the U.S. Army Medical Corps from 1942 to 1946 in Africa, Sicily, Italy, France and Germany.

He is a member of the Southwestern Surgical Congress, the American Board of Surgery and the American College of Surgeons.

Definition of Triage

FOR THE PURPOSE of this *Journal*, triage is that dynamic and continuing medical process of classifying the sick and injured according to the urgency and types of injuries presented, in order that each casualty may receive optimum treatment and care in the best staffed and equipped treatment facility available, within the optimum time and in favorable condition, to the end that the greatest good can be rendered to the greatest number in the shortest time with the means available.

The most highly qualified physicians available in disaster and support areas should be employed in the triage of casualties and the most competent medical specialists available should prescribe the treatment for those casualties whose injuries fall within their respective fields. Triage must be a continuing function throughout all medical installations and facilities treating the casualties which result from a mass attack.

Insofar as priority of treatment, evacuation, hospital admission, and out-patient care are concerned, all sick, injured, and wounded personnel in disaster and supporting areas, whether physically or mentally incapacitated or suffering from acute or chronic conditions, may be classified into four treatment priorities.

Definition of Priorities

PRIORITY I: Those requiring out-patient care only.

Examples of Priority I casualties would be those that have:

(a) Small lacerations or contusions.

(b) Simple fractures of small bones.

(c) Second degree burns of less than 10% extent.

(d) Short term whole body ionizing radiation doses of minor degree.

(e) Moderate neuropsychiatric disorders.

PRIORITY II: Those moderately injured or ill whose chances of recovery are good following immediate definitive treatment.

Examples of Priority II casualties are those who have:

(a) Hemorrhage from easily accessible site.

(b) Rapidly correctable mechanical respiratory defects.

(c) Severe crushing wounds of the extremities.

(d) Incomplete amputations.

(e) Severe burns of the face and upper respiratory tract necessitating tracheotomy.

PRIORITY III: Those injured and ill whose chances of recovery are not jeopardized by delayed definitive treatment.

Examples of Priority III casualties are:

(a) Simple fractures of major bones.

(b) Moderate lacerations without extensive bleeding.

(c) Second degree burns of 10 to 40% and third degree burns of 10 to 30% of the body surface.

(d) Non-critical central nervous system injuries.

PRIORITY IV: Those critically injured or ill who require extensive, complicated, time or material consuming procedures, and those who are beyond medical help.

Expectant therapy is used for those with:

(a) Critical injuries of the central nervous system or respiratory system.

(b) Penetrating or perforating abdominal wounds.

(c) Multiple severe injuries which are critical in nature.

(d) Severe burns of large areas including 40% or more of the body surface.

(e) Established lethal or supra-lethal doses of total body radiation.

Objectives of Triage

The objectives of triage under mass casualty conditions are:

1. Ensure that at the earliest possible moment, maximum number of casualties are restored to a state of mental and physical health that will enable them to fulfill an effective role in the recovery effort of the nation.

2. Ensure appropriate care for each casualty in accordance with the established priorities and within the available resources.

3. Ensure maximum use of available medical facilities and resources.

4. Ensure an even flow of casualties through the evacuation chain into proper treatment facilities.

5. Ensure that only casualties in need of professional care receive it.

6. Ensure that casualties who, after treatment of minor conditions will be able to participate in recovery efforts, are given a high treatment priority classification.

7. Ensure that casualties whose conditions are such that immediate treatment is necessary and successful recovery is likely without the use of inordinate amounts of time, equipment, supplies and personnel, are given a high treatment priority classification.

8. Ensure that casualties whose conditions are such that, following emergency care, their definitive treatment may be delayed without detriment, are given a high treatment priority classification initially and a lower classification subsequent to the emergency treatment.

9. Ensure that casualties whose conditions are such that recovery is unlikely or that inordinate amounts of time, equipment, supplies, and personnel will be required in their treatment, to the detriment of others, are given a low treatment priority classification.

10. Decrease morbidity and mortality.

Considerations in Triage Operations

Since effective triage is the key to optimum use of available medical and evacuation resources, each physician sorting casualties, in addition to being highly competent and well-trained in his field, must demonstrate mature judgment, be capable of quick and sound decisions, and possess knowledge of and give consideration to the following factors when determining priority of treatment, evacuation, and destination of mass casualties:

a. Mass casualty treatment priorities.

b. Expected number of casualties by treatment priorities.

c. Capacity, capabilities and census of his own installation.

d. Capacities, capabilities, census and locations of other installations.

e. Surgical back-logs at his own, adjacent and supporting medical installations.

f. Type and length of treatment procedure each casualty requires, amount and length of post-operative treatment likely to be required, and the chances of recovery each casualty possesses.

g. Effect of delayed treatment on each casualty.

h. Effect on other casualties, of treatment or evacuation of a casualty.

i. The status of the supplies and equipment at his own, adjacent and supporting installations.

j. Types and availability of evacuation vehicles.

k. Evacuation times, by type of vehicle, and condition of routes between his own and medical installations.

l. Effect on supporting installations of evacuating casualties thereto.

m. Malingeres.

Results of Triage Failure

Failure of triage, or inadequate sorting results in:

a. Waste of time, medical personnel, supplies, equipment, and evacuation vehicles.

b. Accomplishment of less good to fewer casualties.

c. Delayed treatment for those in need thereof.

d. Increased disability.

e. Prolonged convalescence.

f. Greater morbidity and mortality.

g. Overloading of one, several, or all, medical facilities.

h. Underloading of one, several, or all medical facilities.

i. Over or under use of evacuation vehicles.

j. Loss of needed manpower.

k. Lowered morale among medical and health personnel, as well as patients.

Summary

Triage implies the evaluation and classification of casualties for purposes of treatment and evacuation. It is based on the principle of accomplishing the greatest good for the greatest number of wounded and injured, at the particular time, within the means available. Triage requires the best efforts of an experienced physician who knows people, diseases, treatments, prognoses, and the logistics of medical care. Triage is absolutely essential if the physician is to function with mass casualties, where there might be tremendous discrepancy between the number of patients on the one hand, and the number of physicians and the austere medical supplies on the other hand.

Radiation Warning Given by Small Device

A new type of radiation protection instrument called the Personal Radiation Monitor (PRM) has been developed at Oak Ridge National Laboratory. About the size of a fountain pen and weighing only 3½ ounces, the device emits a warning tone and flashes a small light in the presence of a gamma radiation field. Scientists say its present greatest value would be immediate warning in the event of a radiation accident. (Washington Star, December 13, 1960)

Burns in Atomic Disaster

Outline of Current Plan For Emergency Treatment

VANCE A. BRADFORD, M.D., F.A.C.S.

Vance A. Bradford, M.D., is Associate Professor of Surgery at the University of Oklahoma School of Medicine, where he graduated in 1938. A Fellow of the American College of Surgeons, Doctor Bradford is also a member of the Southwestern Surgical Congress and the Oklahoma City Surgical Society.

During World War II, Doctor Bradford served as Assistant Chief and Chief of the Section at the Burn and Plastic Surgery Center of the 158th General Hospital in England.

THERMAL RADIATION travels at the speed of light in a straight line radially from the source. Beyond the perimeter of lethal range, it produces flash burns.

Initial ionizing radiation increases in radius by a factor of only 5, between a 1-kiloton and a 20-megaton explosion. Blast effect increases by a factor of 27. However, thermal radiation sufficient to cause burns, increases by a factor of 64 or from a radius of 0.5 mile to 32 miles.

Thus, it is estimated that of the injured survivors of nuclear disaster, 60% or more will be burned. There were 70,000 people burned at Hiroshima, of which 40,000 required treatment.

Burns will be largely of two types:

1. Flash Burns (40%-50% of burns). Instantaneous and on body surfaces facing the source of heat. Most of them will be second degree in depth. Many of the burned will have associated injuries from the blast.
2. Flame Burns (20% of burns). Resulting from clothing ignited by thermal radiation or from burning structures of environment.

How does one start with a sudden patient load of 5,000, 10,000, or more burns? Most of them will be civilians. Their treatment is clearly the responsibility of the medical profession. Extensive research has for several years delved into this mass casualty problem, and into concrete plans toward meeting it. This outline is intended to be a compilation of currently accepted plans for handling mass burn casualties.

Considerations in Triage

1. Effective triage is first and mandatory as the key to optimum use of available resources for the greatest number of casualties.

2. The patient load will preclude the usual individualized therapeutic latitude of which we as physicians are normally so proud.

3. Standardization for maximum salvage of human life is a necessity.

4. Thoughtful compromises and improvisions in therapy will be in order.

Sorting and Classification

An expert is preferred for this task. Here, one must rapidly inspect and estimate the area and depth of the burn and classify each casualty for treatment. Sketch the burn area on a tag with class designation, and note other injuries or respiratory burns. Three questions are decided. Which patients can survive without treatment? Which patients have little chance of living even with treatment? What is the priority relation to other injuries?

I. SELF CARE BURNS. Ambulatory patients with 15% body surface burn or a burn index of 8 or under (burn index being the sum of 0.5 point for each per cent surface of second degree burn added to 1.0 point for each per cent surface of third degree burn).

II. MODERATE BURNS. Those requiring hospitalization but not immediately threatening life. Burn index 8 to 15 or over 20% body surface. Third degree burns of hands alone are also in this class.

III. SEVERE BURNS. Burn index of 15 to 45 or second and third degree burns of 20% to 70% who are expected to be saved by vigorous therapy.

IV. OVERWHELMING BURNS. Burn index of over 45 or third degree exceeding 80%, or exceeding 50% in aged patients. Get medical consultation before assigning patients to this class.

Priority for Treatment

Shock, the immediate cause of death, may develop in a period of 4 to 24 hours, and must be prevented.

First priority for emergency treatment is for Class III, the seriously burned, where aggressive measures are expected to make the difference between life or death.

Second attention is to Class II, which needs some replacement therapy, but which could wait, if necessary.

There may be no time to treat Class IV, the designated hopeless. Class I may need little therapy. Therefore, get Classes I and IV out of the working area and concentrate effort on Classes II and III.

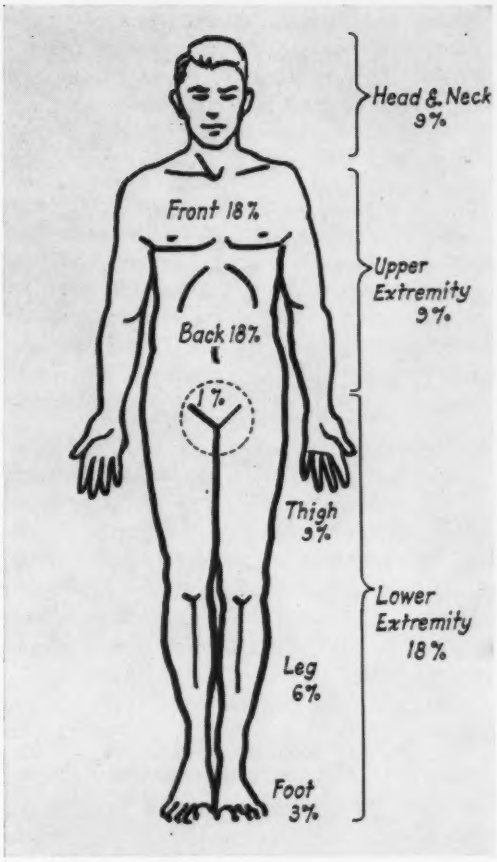


Figure 1. "Rules of 9" for computing proportion of body surface area involved in burns.

Aid Station Handling of Categories

General Measures

1. Control pain with morphine sulfate, 8 to 10 mgs. intravenously in those with impending shock, where absorption is uncertain. Give the usual hypodermic for less severe cases.

2. Protect burn wounds as much as possible from further contamination.

3. Segregate patients by classes in large rooms to save time and help.

4. Prophylactic tetanus toxoid or T.A.T. is given.

5. Remove constricting articles such as rings, bracelets, wrist watches, belts, or boots.

Class I. Reassure and supply previously prepared written instructions for self-treatment, including packets of 3 gms. of salt and 1.5 gms. of soda to be drunk in a quart solution. They are also given a 10 day supply of tetracycline tablets. Now, this large group is out of the way.

Class IV. After consultation with another physician, this category of burned patients is made comfortable with morphine for pain, and put outside the working area without treatment. Some of them may survive, and when time permits, they may be changed to Class III. Otherwise, they have the lowest priority for therapy or hospitalization.

Class II. Most of them would require some parenteral colloid and electrolyte replacement, but could survive the first several hours untreated or incompletely treated. Give oral electrolyte solution, oral antibiotics, and possibly morphine, if time permits. This group may have burned surfaces covered with dressings, while waiting for evacuation. They have second priority for transportation to a hospital or burn center.

Class III. These severely burned casualties may tolerate little by mouth, may be bordering on shock, and require immediate attention after sorting. Large one piece emergency dressings may be applied. They have first priority for transportation to full treatment.

Principles of Emergency Treatment

Early deaths are from obstructed airways or from hypovolemic shock. Therefore, systemic therapy, not local care of the burn, has precedence. If laryngeal edema is evident in any degree from head and neck or respiratory injury, do a tracheostomy. Start intravenous fluids immediately with any fluid available: plasma, dextran, dextrose in saline, or dextrose in water, in this order of preference. The mathematics of the whole amount of replacement may be computed later.

Begin prophylaxis for infection with penicillin, 400,000 units intramuscularly. If the patient is penicillin sensitive, give tetracycline, 500 mgs. every 8 hours.

With the first emergency measures under way or out of the way, begin outlining the colloid, electrolyte, and fluid replacement therapy on the basis of expected deficits.

Simple clinical signs and the urinary output must be the guides for adequacy of therapy. There is no time or facility in this situation for blood chemistry. Therefore, if possible, have indwelling bladder catheters for accuracy in measuring urine volume.

Urine Volume Control

25 cc/hr output—minimal replacement (adequate in the aged)
50 cc/hr output—good balance
75 cc/hr output—over hydration, if persisting for several hours

Parenteral Replacement Formulae
First 24 Hours Post Burn

Kg. body wt. x % burn for colloid needs
Kg. body wt. x % burn for electrolytes
2,000 cc 5% dextrose in water
Give ½ of total first 8 hours
Give ¼ second 8 hours
Give ¼ third 8 hours

Percentages of burned surfaces above 50% are figured as 50% in computing the replacement fluids. It may be dangerous to give more than 10,000 cc of fluid intravenously in a 24 hour period. It may be necessary to give colloids and electrolytes simultaneously in separate veins. Dextran is an adequate colloid for second degree burns up to 30% of body surface. Patients with considerable third degree burns should have colloids supplied by equal amounts of whole blood and dextran.

Whole Blood

Colloid	Plasma
	Plasma expanders such as dextran
Electrolytes	Sodium chloride solutions
	Ringers lactate solutions

Second 24 Hours Post Burn Schedule

Give ½ first day's estimates of colloid and electrolytes.
Give 2,000 cc 5% dextrose in water.

Third Day Plan

Give oral electrolytes, if possible in the form of a teaspoon of salt and a half teaspoon of soda in a quart of water.
Give blood as required.

After three to four days when the electrolytes are stabilized and urinary diuresis of sequestrated edema begins, the oral electrolyte solution may be stopped. Vitamins B complex and C are supplied in liberal doses. Anemia, if present, is corrected with whole blood transfusions. Protein depletion is usually marked and must be restored by the intake of several times the normal requirement.

One must be alert to complications along the way and deviate from the routines as indicated. Restrict fluids in the event of anuria. Guard the rapidity and volume of replacement fluids in the aged. Vary the estimates of injury and of therapy for infants.

After systemic treatments are well under way, attention may be given to the burn surface, locally. In the aid station, or its equivalent, little if anything specific was done to wounds. Now, do minimal debridement of loose skin and blisters, clean with soap and water, and rinse with saline.

The exposure method is suitable for one-surface burns and for burns of head, neck, and perineum. Preferably the patient should be on sterile sheets and attendants should wear masks.

Circumferential burns, which cannot be properly exposed for drying, may be dressed with dry, prepared, sterile, one piece pads, now a standard item in the army. These are special designs for dressing burns and come in sizes 18″ x 22″ and 36″ x 22″ with semi-elastic roller bandages. The outer surface is water repellent, the intermediate part of the pad is absorbent, and the burn contact surface is fine mesh gauze.

The intermediate and repairative phases of the burn treatment program are not within the scope of emergency therapy here presented. However, it is believed that barring a second attack in the same area, time would permit distribution of patients to facilities for fairly ideal programs of further treatment and rehabilitation.

Summary

1. A compilation of currently proposed plans for the emergency treatment of mass burn casualties has been outlined.

2. The emphasis is on rapid sorting and classification.

3. Only essential, life saving measures are possible during the early post burn period.

BIBLIOGRAPHY

1. Casberg, Melvin A.: Emergency Treatment of Burns in Mass Casualties, California Medicine 83: 289, 1955.
2. Nato Handbook: Emergency War Surgery, Thermal Burns: 20-34, 1958.
3. Vogel, Lieut. Col. Edward H., Jr. (M.C.): Management of Burns Resulting From Nuclear Disaster, J.A.M.A. 171: 205-208, 1959.
4. Department of The Army Technical Bulletin: Early Medical Management of Mass Casualties in Nuclear Warfare: October, 1955.
5. Army Medical Service Graduate School: Management of Mass Casualties: March, 1955.
6. Safley, Thomas J.: Emergency Treatment of Burns, Mississipi Doctor: June, 1954.
7. Symposium on Medical Planning for Disaster: California Medicine 93: 69, 1960.
8. Miller, Capt. Donald W. (M.C. U.S.N.): Mass Thermal Burns, Military Medicine 319-325: April, 1956.
9. Pearse, Herman E.: Thermal Injuries of Nuclear Warfare, Military Medicine: April, 1956.
10. Symposium on Development of a Program for Uniform Medical and Surgical Care in Disaster, Mississippi Doctor: June, 1954.

An untechnical resume of what a physician should know about radiation effects.

A Review of the Biologic Effects of Radiation

PHILIP C. JOHNSON, Jr., M.D.

Since graduating from the University of Michigan Medical School in 1949, Philip Carl Johnson, Jr., M.D., has been certified by the American Board of Internal Medicine. He is now Associate Professor of Medicine at Baylor University College of Medicine in Houston, Texas, and Director of the Radioisotope Laboratory at the Methodist Hospital.

From 1952 to 1954, Doctor Johnson served as a First Lieutenant in the U.S. Air Force. He is a member of the Central Society for Clinical Research, the Southern Society, the American Federation for Clinical Research and the Society of Nuclear Medicine.

MANY THOUSANDS of publications have been written about the biologic effects of radiation as it pertains to man. This has been necessary because radiation effects are complex, difficult to explain and still incompletely understood. It would be desirable for every physician to have a nearly complete knowledge of the effects and problems of radiation following both therapy and accidental exposure. This is necessary because in general the public will turn to their doctor when questions arise concerning radiation. It is the purpose of this article to give a thumbnail sketch of the biologic effects of radiation as it relates to medicine. Because of its brevity, this outline will lack completeness and to a radiologist or radiohealth physicist it may seem to be incorrect and too superficial. Even so, it is my hope that it will be concise enough to offer a ready reference to the questions commonly asked about radiation.

Radiation, whether due to gamma rays, alpha particles or beta particles, produces ionization of the atoms which make up matter. During the process of ionization orbital electrons are given enough energy by the radiation to cause them to leave their orbital paths. Since the transfer of electrons makes up chemical reactions, chemical changes are brought about as a result of these ionizations. One type of chemical compounds produced by ionization in water are peroxides which can alter or destroy protein molecules. If low concentrations of peroxides are formed, they can be handled by chemical inactivators within the cell and very slight, if any damage occurs. If greater concentrations are produced these inactivators are inadequate and the peroxides are able to react with and change enzymes, genes, etc. within the cell. If high enough concentrations are produced, cell death results. The destruction of important proteins in the cell may produce no effect immediately but the cell's longevity, reproductive ability and the ability for repair are affected. If damage occurs to the germinal cells mutations may appear in succeeding generations of the organism. Up to the present there is no known way to protect tissue from radiation effect once the radiation has entered the cell. Research work in this field is very active and it is possible that compounds will be found that protect against radiation damage. At least some of the efforts to find such a substance have been directed toward compounds which will react with the peroxides produced in the cells.

Radiation exposure can be divided into acute and chronic forms. To predict radiation effects, the site of exposure must be defined as being total body radiation or radiation to a specific organ system or portion of the body. An acute exposure to 350 roentgens total body radiation will produce a 50% mortality. However, a 350 roentgens dose is commonly used in radiation therapy to a specific area with little likelihood of producing death. Radiation is a form of energy which is extremely potent as far as biological systems are concerned. Three hundred and fifty roentgens equals 3.5 calories. It can be seen then that it takes considerably more energy as heat to produce the same damage as that following radiation exposure.

Response to Radiation

The response to radiation can be divided into several categories. First, a hyperacute reaction in which the radiation doses are usually greater than 3,000 roentgens to total body radiation. These produce death within the first half hour. This death is abrupt and is due to central nervous system damage. Doses of this level are 100% fatal. After a smaller radiation exposure, 2,000-3,000 roentgens, a latent period occurs between exposure and death. In addition the onset of symptoms is less acute. The clinical symptoms of the acute reaction are: fatigue, nausea, vomiting, and diarrhea. The diarrhea usually becomes bloody and a daily increase in fever occurs. Lymphocytopenia, thymocytopenia and anemia are found in that order. A person who dies within a day or so of radiation exposure may actually die without a leukopenia. Death during the first week after exposure usually means a total body dose greater than 800 roentgens.

A subacute radiation reaction is characterized by death about six weeks after exposure. Epilation of hair occurs and an aplastic anemia is also present. Bacterial infection is largely responsible for death in these cases. As a general rule these individuals have an acute response on the day of their exposure characterized by nausea and vomiting. Following the acute reaction, there is a remission during which time the patients feel essentially well. One to two weeks later radiation epilation begins associated with malaise, fever, agranulocytosis and finally bloody diarrhea from an ulcerative gastritis or enteritis.

It is usually difficult to determine the exact radiation dosage a patient has received unless radiation monitoring equipment was near at hand. A rough rule of thumb, however, is that a patient will vomit within the first two hours after exposure if he has received over 200 r total body radiation. If he receives over 600 r he most certainly will die. If he received less than 200 r he should not experience anything but minimal nausea. If the absolute lymphocyte count is less than 800, two hours after radiation exposure, the patient has sustained a severe radiation injury. If total white blood count stays above 1800 he will probably not die. But, if the white count drops below 400 and the platelets fall within the first 48 hours, the patient will most certainly die.

Leukemia

The response is somewhat different when persons are exposed to multiple small doses whose total is equal to one sub-lethal dose of radiation. Radiation exposure of this type produces diseases which for all practical purposes are identical with many of the diseases ordinarily seen in the absence of known excess exposure to radiation. These include cancer, leukemia, heart disease and cataracts. These diseases occur in a higher incidence and at an earlier age in irradiated persons than they do in the population at large. Leukemia is a classical example of this and the effects radiation has on leukemia was demonstrated in studies of the people exposed to the atomic bomb blasts in Japan. The leukemia rate was found to be 120 cases per 100,000 in persons close to the center of the bomb blast. It was 56 per 100,000 in persons far enough away that their exposure to the acute radiation did not produce epilation. This compares to a natural incidence of about 2/100,000.

It is well established that large acute doses of radiation produce an increase in the incidence of leukemia. This increase is proportional to dose. A problem which is still unsolved though, is whether there is a threshold effect and a dosage of radiation below which an increase in leukemia is not produced. Any attempt to prove that small doses of radiation do increase the incidence

of leukemia, requires an extremely large study. For example, if the dose of radiation from birth to age 34 is increased by five roentgens the minimum patients required to determine an increase in the incidence in leukemia is 6,000,000 people. On the other hand if the dosage is 300 r a population size of 10,000 is sufficient. It has been assumed that the average dosage of radiation received by the individuals in Japan was somewhere between 50 to 200 r. Currently there is interest in whether treatment of thyrotoxicosis with radioactive iodine is apt to produce an increase in the incidence of leukemia. The usual therapeutic dose of radioactive iodine gives a total exposure to the bone marrow which is usually less than 12 roentgens. If this exposure were to increase the incidence of leukemia it would increase it by 1.2/100,000 patients treated. To prove this point statistically would require a treated population of over a million patients. It is of interest that calculations to date would suggest that leukemia occurring after treatment of radioactive iodine is no more frequent than that occurring naturally suggesting that the above calculation may be correct. A different situation exists, however, when a large dose of radioactive iodine is used in the treatment of thyroid carcinoma. Here 200 to 1,000 times greater exposure occurs. A population size of 10,000 patients would be necessary to prove an increase in leukemia. This is borne out by clinical experience which early noted that some of these patients treated for carcinoma of thyroid developed leukemia.

Accumulative Exposure

We, like all other living creatures, are continually exposed to a natural background radiation. This comes from natural radiation due to radioactive substances in rocks, radioactive carbon and potassium within our bodies and bombardment of the earth by cosmic radiation. It is assumed that over a 30 year period the natural background radiation exposure for each member of our population is about 4.3 roentgens. This compares with approximately three roentgens exposure from x-ray and fluoroscopy and 0.1 roentgens due to the increasing natural background as a result of atomic bomb testing. An example of a way to show that chronic radiation exposure shortens life is the study made by Shields Warren. He analyzed the age of death of some 82,000 physicians in the United States. In doing this he assumed that there was a good probability that from 1930 to 1941 when the dangers of ionizing radiation were first called to the attention of the medical profession, physicians using x-ray equipment in their practice probably exceeded the now established national permissible occupational exposure limits set up by the Atomic Energy Commission. He further believes that at least some physicians received an accumulative exposure as high as 1,000 roentgens. He found that on the average a radiologist dies 5.2 years earlier than do other physicians. Specialists who make considerable use of x-ray in their specialty (e.g., urologists) although probably exposed somewhat less than the radiologist showed also a definite shortening of their life span but to a lesser degree. Analysis of the causes of death showed that the radiologists died earlier of coronary disease, cerebral hemorrhage, nephritis, septicemia, bronchial pneumonia and even peptic ulcer than did other physicians.

Genetic Defects

It has been estimated that a population exposure of about 60 r will increase the number of genetic defects found in the offspring of these individuals approximately two times. You would find a two times greater incidence in mental defects, epilepsy, congenital malformations, and most other known congenital defects. This degree of exposure is not likely except as a result of atomic warfare. It is now generally assumed but not yet established for low dose that all radiation will produce some damage to the human population. This damage occurs and follows statistical rules. Its importance to specific individuals may range from nothing up to the immediate cause of his death. It is obvious that some radiologists lived out their expected normal life span. On the other hand, our population, and in fact all living animals, has been exposed to radiation since the beginning of time. Exposure to natural radiation over the ages must have produced at least part of the mutations which have been associated with the evolution of animal life. Natural selection gradually weeded out the defective mu-

tations and at the same time the more useful mutations which aided the animal in its survival were maintained. While a low mutation rate is useful to a specie, a sudden dramatic increase in mutation rate would prove disastrous. On the average, there are about 1,000 unfavorable mutations to each favorable mutation. Any sudden increase in rate would produce so many abnormal individuals that natural selection would not be possible since most individuals would be abnormal.

It certainly behooves all physicians to do what they can to keep the radiation exposure of our population to a minimum. Since medical x-ray exposure and medical exposure to radioisotopes is one of the major causes of radiation exposure to parts of our population, it would appear that this general area is one which should be kept to a practical minimum. It is anticipated that with the general expansion in the use of atomic power that the working population will gradually be exposed of their own volition to more radiation. The Atomic Energy Commission has the duty to see that this exposure is kept to a practical minimum. The present maximal permissible levels set up by the Atomic Energy Commission appear to be extremely conservative and it is unlikely that if these rules are followed the advent of the use of atomic energy will significantly hurt our population in the generations to come.

The medical and scientific advances which have resulted from the use of radiation and with them the improvement in our standard of living seems to more than justify the problems associated with the use of radiation in science, medicine and industry. It is necessary that we all work toward a better understanding of radiation and its dangers and that we be neither on the side of extreme conservatism which might stiffle progress or on the side of extreme radical disregard for its effects which might permanently destroy or harm the human race.

REFERENCES

1. Beierwaltes, W. H., et al.: Clinical Use of Isotopes, Saunders, Philadelphia, 1957.
2. Buck, C.: Population size required for investigating threshold dose in radiation induced leukemia. Science, 125: 1357, 1957.
3. Lewis, E. B.: Leukemia and Ionizing Radiation. Science, 125: 965, 1957.
4. Warren S.: Longevity and Causes of Death From Irradiation in Physicians. J.A.M.A., 162: 464, 1956.
5. Genetic Effects of Atomic Radiation. Science, 123: 1157, 1956.

AMA Woman's Auxiliary Members Build Fallout Shelters

Mrs. Harlan F. English, President-Elect of the Woman's Auxiliary to the American Medical Association, has set an excellent example of civil defense preparedness for other members of the organization by building a fallout shelter in her home. Mrs. English lives in Danville, Illinois.

In Cleveland, Ohio, another member of the Auxiliary concerned with the need for civil defense preparedness has initiated a crusade by designing and building her own shelter. Mrs. F. M. Freimann, Civil Defense Chairman of the Women's Auxiliary to the Academy of Medicine of Cleveland, learned about being prepared during World War II when she and her husband lived in Germany and Hungary. They moved to this country in 1951.

An article on Mrs. Freimann's shelter and civil defense activities is carried in the January, 1961 *Bulletin* of the Woman's Auxiliary to the American Medical Association.

Amateur Management of Mass Casualties

GIFFORD H. HENRY, M.D.

A 1927 graduate of the University of Illinois School of Medicine, Gifford H. Henry, M.D., was certified by the American Board of Surgery in 1940.

A Captain in the Medical Corps, U.S.N.R., Doctor Henry is the former Medical Director of the Tulsa City-County Civil Defense Administration and a member of the Tulsa County and Oklahoma State Committees for Civil Defense.

He is a member of the Southwestern Surgical Congress and the American Fracture Association.

ALTHOUGH the injuries sustained, and the problems of surgical care of casualties will be greatly intensified in any thermonuclear conflict, the basic principles of traumatic surgery are still the same. The need to understand them, accept them and practice them, is still the same.

This article points out some of the variations of ordinary surgical principles which would be applicable to a situation of great disparity between the number of casualties and the medical resources available.

Amateur Management of Mass Casualties

Practical planning for emergency treatment of mass casualties should postulate complete absence of modern hospital facilities because weapons of modern warfare might easily destroy all such buildings in a disaster area. Surviving medical personnel would have to spread themselves thinly among emergency installations. Semi-professional personnel would assume the responsibility of performing most necessary services. Many casualties would care for themselves with the help of friends and buddies. Many others would have no treatment at all.

With these austere conditions in mind it would seem feasible to outline some simple measures which could be used at aid stations by intelligent personnel who were not familiar with all the problems they might encounter.

In order to do anything at all for the sick and injured, a few supplies would have to be obtained somehow somewhere. Otherwise this presentation would be fruitless. The following presents a list of materials with which a fair job could be done although it is doubtful if all of them would be available at a single installation. A considerable amount of improvision might be required.

Minimum Equipment Needed

1. Airways—curved metal or plastic tubes to be placed into the mouth over the tongue to keep airway open for breathing.
2. Oxygen—from metal tank, to be given

by face-mask, or through a rubber tube inserted through nostril to throat.

3. Blood—in containers which are hung inverted over the litter, after which needle is introduced in vein and fluid flows through attached tube. Avoid air bubbles.

4. Plasma—dextran and fluid electrolytes —same as for blood.

5. Morphine — used intravenously, never more than ¼ grain (15 mg.) to a patient at one time, and only to control severe pain.

6. Barbiturates—used orally for restlessness, anxiety, or to promote sleep. Average doses 0.1 gm. or 100 mg. Also may be available in intravenous form with average dose for preparation as stated on ampule.

7. Surgical instruments should be boiled or otherwise rendered sterile before use.

8. Gauze dressings in various sizes, sterile.

9. Bandages of mesh gauze, or elastic, not sterile, various sizes.

10. Ether for anesthesia is dropped from punctured can on cloth or mask over nose and mouth.

11. Splints prefabricated of metal, wood or wire mesh, or improvised from any suitable material such as magazines, boards, shingles, pillow (tied around lower leg).

12. Splints of plaster of paris to be fashioned just prior to use by wetting folded strips of plaster roll and binding to the extremity while wet. They stiffen when dry. Use padding.

13. Tourniquets of ordinary rubber tubing should be wound tightly around the extremity with two turns and a knot, or clamped with an instrument after all the slack has been taken up. A blood pressure cuff can be used for this purpose with pressure maintained at 200-250 mm. of mercury. Other forms of tourniquets may be fashioned from belting or stout cloth, using stick for twisting tight. Padding is desirable.

14. Tetanus toxoid, .5 cc. subcutaneously by hypodermic injection to boost immunity if patient has been immunized previously.

15. Otherwise tetanus antitoxin given intramuscularly in doses of 1500 to 6000 units to non-sensitive individuals (after skin test), dose depending upon urgency and severity of injury.

16. Oral antibiotics usually in capsule form in doses of about 250 mg. each every six hours.

17. Intramuscular injections of antibiotics averaging about 250 mg. per dose given about every eight hours.

18. Catheters and tubing, various sizes, sterile.

19. Local anesthetic agents in bottles or ampules to be injected by hypodermic syringe and needle. Pontocaine ½% for eyes.

20. Hypodermic syringes and needles, various sizes.

21. Cotton and applicator sticks, soap, towels, alcohol.

Chest Wounds

Penetrating wounds of the chest cavity make a sucking noise when the patient breathes. If adequate surgical facilities are nearby, the wound should be inspected and cleaned, after which a big dressing is placed over it and strapped firmly to the chest wall with wide strips of adhesive tape. Immediate evacuation is required. If surgical help is not close by, debridement should be carried out, then the tissues over the opening should be closed by sutures around a large rubber indwelling tube. The distal end of the tube should then be placed in a lower receptacle of water, or attached to a rubber flutter-valve which will allow air to escape from the tube but prevent air from re-entering.

Chest wounds which do not suck are cleaned and dressed, after which adhesive straps are used to immobilize the chest wall on the affected side, particularly if rib injuries are suspected.

Abdominal Wounds

Wounds of the abdomen may or may not present herniation of intestines. Washing extruded viscera with saline and replacing them in the abdomen when possible may promote more comfortable transportation to rear areas. Covering viscera with a moist saline dressing beneath a large abdominal pad is the alternative. Shock must first be modified by suitable measures. Smaller penetrating or perforating wounds also constitute a surgical emergency. If the casualty must be held a few hours, proceed with sedatives, analgesics and intravenous fluids to sustain life, basing treatment on general appearance, pulse, and blood pressure levels. Wounds of solid viscera such as liver, spleen and kidneys, might require extensive blood replacements which could not keep up with internal blood loss, and therefore judgment should be exercised in order not to waste blood prior to evacuation of the casualty.

Soft Tissue Injuries

Large lacerations of the trunk and extremities should be flushed out with saline. Sticks, stones, and loose foreign bodies should be removed with a sterile instrument. Accessible bleeders should be secured by a hemostat which may be incorporated into the dressing. Soap and water cleansing around the wound is desirable. Wounds of this kind are not usually sutured at advanced aid-posts. Sterile or clean dressings are applied in and over the wound. Bandages are wrapped in such a manner as to make moderate even pressure over the dressed wound. Pressure dressings are preferred to tourniquets.

If a tourniquet is required to prevent severe blood loss, it should be placed tightly around the extremity as distally as possible, and not disturbed until patient arrives at a surgical station.

Large face and neck lacerations should be approximated by adhesive tape, or by a few stitches to support sagging lips, eyelids, or nostrils. Large flap lacerations of the scalp can be cleaned, replaced, and held by bandages. Testes should be covered by scrotal skin or moist dressings.

Finger and hand lacerations are more easily bandaged over a splint with fingers partly flexed. Walking casualties may be dismissed after treatment. Stretcher cases may then be put aside to await delayed transportation to the rear.

Patients with enough blood loss to require replacement are furnished blood or plasma expanders, if available.

Barbiturates, orally, or morphine in small doses intravenously, are given in selected cases as required. Tetanus toxoid booster (½ cc. hypodermically) may be administered to patients who have been previously immunized. Otherwise, 1500 to 6000 units of tetanus antitoxin is given intramuscularly after negative skin sensitivity tests. These measures may be deferred for several days in most instances.

Antibiotics will be used only if in good supply and if patient remains in custody longer than six hours. Penicillin intramuscularly every 12 hours, or broad spectrum antibiotics orally every six hours should prevent early infection.

Fractures of Long Bones and Hip

Closed fractures (no external wounds) are splinted by applying any available method of immobilization. No traction is used. No circular casts are applied. Ambulatory patients are then dismissed.

Patients with lower limb fractures are held for delayed transportation.

Open or compound fractures (with external wounds exposing bone) are treated by cleansing and irrigation, after which pressure dressings are applied to control bleeding. Splints are placed in such a way as to prevent motion at the fracture points. Pain, if severe, is controlled by a suitable analgesic or sedative. One dose of any available antibiotic may be given. The patient is evacuated as soon as possible for definitive treatment at a support hospital.

Splinting may be accomplished by pillows or blankets tied with cord. They may be of metal, wood, plaster of paris, or cardboard. They should extend an adequate distance above and below the fracture. They should be padded and firm, but not tight. The patient should not be moved until fractures are splinted.

Fractures of Spine

A patient suspected of neck fracture should be placed on his back with head supported in a neutral position, after which he is made as comfortable as possible. No sedation should be used.

Fractures elsewhere in the spine are best carried in the prone position and allowed to "lie on the stomach" until evacuated. No splint is needed.

Pelvic fractures require no special position or splinting.

Eye Injuries

The injured eye should be inspected. Foreign material should be washed out with boric acid solution. Particles seen on the front of the eyeball may be removed by a wet cotton applicator. If they are imbedded tightly, drop ½ per cent pontocaine solution in the eye, cover closed lid lightly with a dressing and allow the patient to find his way to a support station. If both eyes are involved he will have to await evacuation.

Lacerating or penetrating injuries of the eyeball require light occlusive dressings and early evacuation. Pontocaine drops may be used for pain.

Eyelids are not to be sutured unless necessary to prevent drying of the eyeball. Enucleations are not done in the forward area.

Head Injuries

If a patient with an obvious scalp injury is unconscious, stop bleeding by pressure dressings and observe for changes in condition. Resuscitation may be required prior to evacuation. If there is no open skull fracture, expectant treatment is recommended unless deterioration of his condition occurs. Then evacuate as soon as possible. Keep airways open. Use oxygen if breathing is labored. Do not use morphine. Conscious patients present no acute problem.

Genito-Urinary Injuries

Control external hemorrhage as much as possible by pressure dressings over any lacerated parts. If bladder or urethra injury is suspected, an indwelling catheter is necessary. Resuscitate and evacuate promptly. Otherwise an outside opening must be made into the bladder with a tube inserted to drain urine and blood. Severe kidney injuries usually require supportive treatment followed by surgery.

Summary

1. Austere conditions are postulated in which emergency care of mass casualties is rendered by para-medical personnel and laymen working in advanced aid-posts with limited supplies.
2. A practical method of sorting casualties according to priorities of treatment and evacuation is suggested.
3. Limited emergency treatment for certain types of injuries are summarized to include essentials only.

REFERENCES

1. Mass Casualties—Principles Involved in Management. Military Medicine. Vol. 118, No. 4, April 1956.
2. Summary Report on National Emergency Medical Care. American Medical Association, October 1959.
3. Emergency War Surgery, NATO Handbook, U.S. Department of Defense, 1958.

Civil Defense Against Chemical Warfare

MAJOR CHARLES W. DUTREAU
Army of the United States—Retired

G GAS!
A New Weapon of Chilling Terror
WE HAVE IT!—SO DOES RUSSIA!

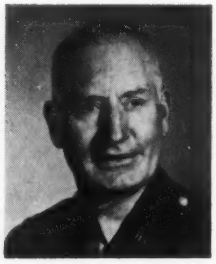
THIS CAPTION appeared on the front cover of *Collier's* Magazine dated November 27, 1953. The words were superimposed over frightened eyes staring out of weird gas masks—accurate drawings of some of our prototypes.

My first impression was that spies had stolen our classified notebooks, or possibly one of my colleagues had talked and would spend the next ten years in Leavenworth. When I had left the Army Chemical Center for a tour in Korea just 20 months before, G Gas was so hush-hush around the research laboratories that if one of us jotted down a logarithm while calculating a toxicity factor, the paper on which is was written was sealed in an envelope marked "Classified Trash" and locked in the vault until the end of the day, when it was burned in a spy-proof incinerator and the ashes pulverized.

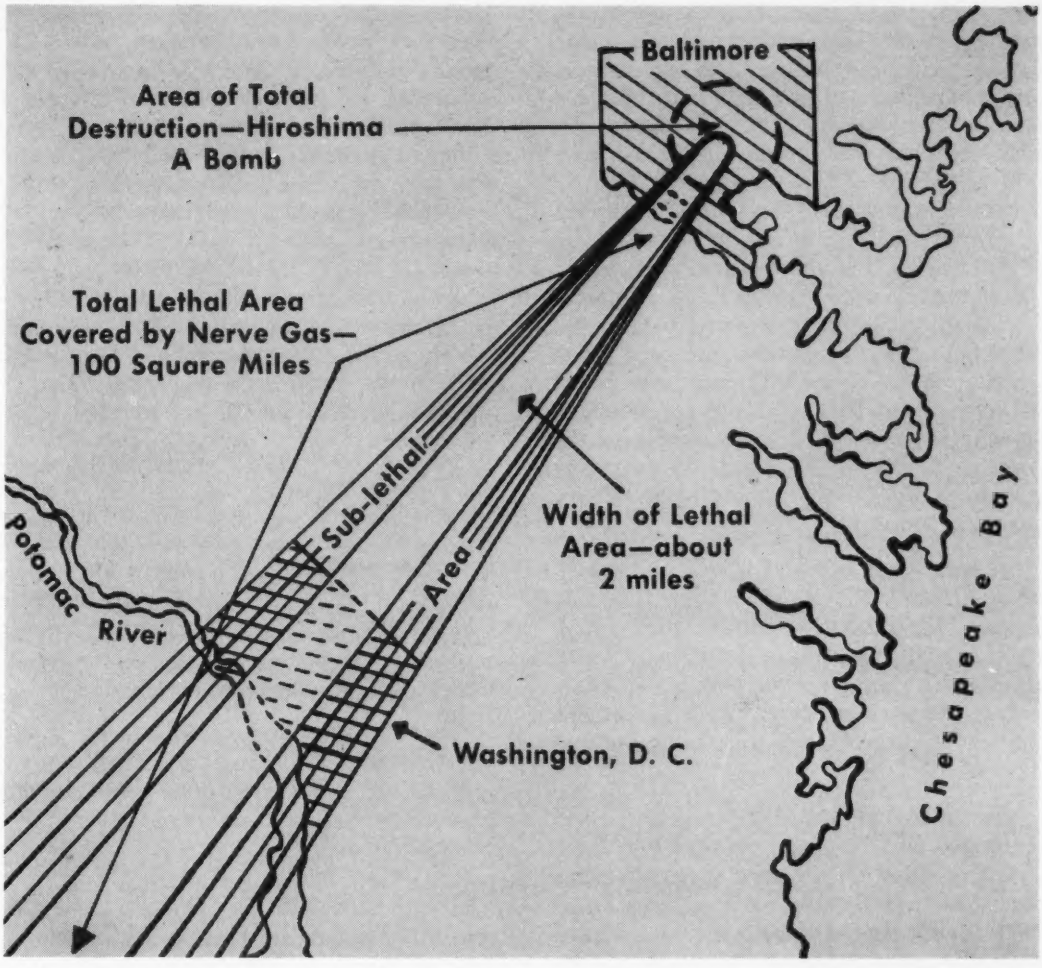
Eagerly I thumbed through the magazine and located the article. It was illustrated by three photographs of the same gas chamber in which many of my own experiments had been conducted in strictest secrecy. They showed 1) a white rat entering the chamber, 2) the same rat in convulsions and 3) the same rat, dead—all in a measured interval of 35 seconds. There were photographs of some of my colleagues, and a statement by Brigadier General William M. Creasy of the U.S. Army Chemical Corps Research and Engineering Command, which said, "Planeload for planeload, and under right conditions, GB represents as great a threat to the civilian population as the A Bomb." (GB is one of several "G" gases.)

The article went on to say that one plane could drop enough gas to kill everyone in 100 square miles. There was a sketch show-

THE AUTHOR



A native Oklahoman, Major Charles W. Dutreau attended both the University of Oklahoma and Texas College of Mines, majoring in Chemistry. During World War II, he was with the Office of Civilian Defense. He was then assigned as Research Engineer with the Army Chemical Center where he conducted early research in toxicity of nerve gases and other new chemical agents. For five years, Major Dutreau was Staff Chemical Officer at the Port of Pusan, Korea and at Fort Sill where he was technical advisor on defense against chemical, biologic and radiologic warfare. In 1960, he retired from the U.S. Army Chemical Corps School in Fort McClellan, Alabama where he was Instructor in Civil Defense. Returning to Oklahoma, Major Dutreau was appointed to his present position of Civil Defense Officer to the Oklahoma State Department of Health.



Typical area coverage from release of seven tons of nerve gas on Baltimore under ideal conditions with slow surface wind moving toward Washington, D.C. Lethal zone extends about 50 miles down-wind. (Adapted from Collier's with permission of the editor.)

ing an aircraft spraying G Gas on Baltimore, and the gas had drifted 50 miles downwind, completely covering Washington, D.C. As an afterthought, it was added that civil defense authorities estimate that a half-gallon container of this gas released in the air-conditioning system or from an aerosol-type bomb in the House of Representatives would kill everybody in the Chamber.

This article was the first comprehensive official release to the public concerning a SECRET weapon that the Germans had developed in the Thirties, and which had been widely known in Europe for many years. It had been in Russia's arsenal since 1945.

There is now much published material on the chemistry and toxicity of at least three of the most common G Gases and the symptoms, prognosis and treatment of G Gas casualties may be discussed with very few restrictions.

Historical

G Gas (G for German) first was prepared in 1937 at Elberfield, Germany by Doctor Gerhard Schrader while searching for a new chemical to kill DDT-immune insects. It was found that this new compound, which Doctor Schrader called "Tabun," killed people in much the same way that DDT killed

flies, and that it built up no immunity in man or insect. The German officials immediately recognized the chemical warfare potential of Tabun and in 1939 constructed a plant at Dyhernfurth in East Germany. By 1942 the plant was producing 1000 metric tons per month of this material. The entire operation was carried out under conditions of secrecy such that neither we nor our allies knew of this new gas until the end of the war, when we captured large quantities of Tabun stored in glass-lined bombs and containers. The Russians occupied East Germany and seized the Tabun plant along with its scientists, engineers and operating personnel, as well as huge stockpiles of the finished product. The plant, its operating personnel, and the stockpile of gas were moved to Russia.

German scientists continued their search for even more toxic chemicals and, in 1938, prepared a substance called "Sarin." In 1944 a third compound called "Soman" was developed. Plants for production of these two gases were under construction at the end of the war. The Russians captured them, also.

The three compounds differ in molecular structure but have essentially the same physiologic action in that they effect a removal of the balance between the sympathetic and parasympathetic nerve systems. For this reason, in the United States we use the general term "nerve gas" to include all chemical warfare agents of this general class. We use the code designations "GA" for Tabun, "GB" for Sarin and "GD" for Soman. Each compound has certain advantages and disadvantages as a chemical agent. The Russians have adopted GA as the standard filling for their chemical munitions because they inherited trainloads of this agent, along with the complete Tabun plant, from the Germans. We in the United States had to start from scratch, and chose GB principally because it is about four times as toxic as GA and more than 25 times as volatile at 30 degrees C.

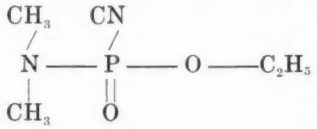
Physical Properties

In the pure state all of these compounds are clear, colorless liquids which, when volatilized, give off vapor having about five or six times the density of air. When the substance is released in the open, the vapor moves with the wind like fog, entering and remaining in low enclosed areas, basements and fallout shelters which do not have gas filters in their ventilating systems. GA and GD have very faint, fruity odors. GB has no detectable odor in the pure state.

Chemical Properties

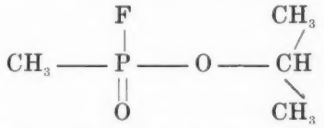
All of these agents are organic phosphorous compounds that may be considered simply as substituted phosphoric acid, phosphine oxide, or various other forms depending upon one's preference for nomenclatures.

GA has the structural formula



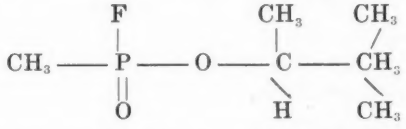
and may be thought of as cyanodimethylaminoethoxyphosphine oxide, ethyl ester of dimethylaminocyanophosphoric acid, etc.

GB has the structural formula



The official Chemical Corps name of this compound is isopropyl methylphosphonofluoridate. Some chemists like to call it fluoroisopropoxymethylphosphine oxide, while others prefer isopropyl ester of methyl fluorophosphoric acid.

The structural formula of GD is



This compound is fluoromethylpinacolyloxyphosphine oxide, pinacolyl ester of methyl fluorophosphoric acid, etc.

These compounds hydrolyze slowly in water but fairly rapidly in strong acids or alkalis.

Physiologic Action

It is generally believed that muscular contraction is implemented or stimulated by the

presence of acetylcholine in the myoneural junction. This substance seems to be formed by a chain reaction which combines choline and acetate already present in the tissue. Acetylcholine appears to be produced at the junction only when the reaction is triggered by a nerve impulse. Under normal conditions, as acetylcholine is formed it is broken down into its original components by action of a specific enzyme—cholinesterase—which also is present in the tissue. This reaction goes on in equilibrium so long as the nerve impulse continues and cholinesterase is present under normal conditions. This cholinergic action prevents the buildup of acetycholine beyond the quantity required for normal muscle stimulation.

When the nerve impulse ceases formation of acetylcholine is arrested and cholinergic action goes on to completion, the stimulus is removed and the muscle returns to its normal state of relaxation.

Nerve gas appears to react with cholinesterase in an irreversible reaction in tissue fluid permitting accumulation of acetylcholine and continual stimulation of the parasympathetic nerve system. Muscles thus continuously stimulated remain in a contractile state.

This phenomenon begins in a matter of seconds after nerve gas enters the body.

The effect of accumulation of acetylcholine in the nerve endings is seen in clinical symptoms involving the ciliary body of the eye, the iris, blood vessels, bronchial tree, gastrointestinal tract, and the urinary bladder. Voluntary muscles also are affected and become paralyzed.

Some investigators classify the pharmacologic effects of nerve gas as muscarinic, nicotinic and central, some examples of which are shown in the table below.

Nerve gas vapors are readily absorbed by the lungs. In a high concentration, a person might receive two or three times the lethal dose (LD 50) in one breath of contaminated air. A droplet of GB the size of a pinhead would be lethal if volatilized and breathed, with death probably resulting in two to five minutes. The same droplet on the skin, if totally absorbed, also would cause death—perhaps in five to ten minutes. Again, the same droplet in the eye might cause death in 30 to 45 seconds.

The actual LD 50 by percutaneous absorption under field conditions is much greater than indicated here, due to partial loss of the gas by evaporation.

In prolonged exposure to low concentrations of GA, there is very slight, but definite detoxification. In the case of GB and GD there is no measurable detoxification and effects are cumulative in a straight line.

Toxicity

By Inhalation—Dosage by inhalation is

PHARMACOLOGY OF ANTICHOLINESTERASE AGENTS[a]

Type of action	Site of Action		Response
Muscarinic	Glands: Salivary, nasal, bronchial, gastrointestinal		Increased secretions
	Smooth muscles:	Bronchial	Constriction
		Cardiovascular	Bradycardia, hypotension
		Iris	Miosis
		Gastrointestinal	Increased motility, cramps, diarrhea
Nicotinic	Ganglia		Hypertension
	Neuromuscular junction		Fasciculation, paralysis
Central	Central nerve system		Apprehension, hyperexcitability weakness, incoordination, collapse, convulsions, respiratory failure

directly proportional to the volume of inhaled air. For example, a man at rest who receives a median lethal dose in three minutes at a given concentration, would receive the same dose in one minute if engaged in strenuous exercise which increases his inhalation volume-rate three times.

The median lethal dosage by inhalation of nerve gas vapor for man at rest is about 400 mg-min/m^3 for GA, and 100 mg-min/m^3 for GB. Median incapacitating dosages are 300 and 75 mg-min/m^3 respectively. At 30 degrees C., volatility of GA is 858 mg/m^3 while that of GB is 23,000 mg/m^3.

A dose exactly lethal for the individual, received in a 30 second period causes death in 4 to 10 minutes. The same dose received in a 10-minute period produces death in 10 to 25 minutes from the time exposure began.

By Percutaneous Absorption—Nerve gas in the liquid form has very low surface tension. This property, together with its miscibility in both water and oil, enables it to penetrate the skin in a matter of seconds. However, when a droplet falls on the skin it spreads out over a wide area in a thin film only a few molecules thick, and most of it evaporates before it has time to be absorbed. High temperature increases the evaporation rate.

The LD_{50} of liquid GA by percutaneous absorption for man is estimated to be about 1 to 1.5 gm/man within the normal temperature range. The LD_{50} of liquid GB is 1.7 gm/man; greater than that of GA even though the latter is four times as toxic. This is explained by the higher vapor pressure of GB which gives it a faster evaporation rate so that it remains on the skin for a shorter period.

Nerve gas vapor is readily absorbed through the skin. The LCt_{50} of GA vapor by skin absorption has never been determined but seems to lie in the range of 20,000 to 40,000 mg-min/m^3. The LCt_{50} of GB vapor for naked man by skin absorption is 12,000 mg-min/m^3, and 15,000 mg-min/m^3 for man in ordinary combat clothing. The median incapacitating dosage from vapor on the skin is 8,000 mg-min/m^3 with ordinary clothing.

Symptoms

A minute amount of nerve gas coming in contact with the eyes produces myosis in a matter of seconds. A very low concentration in inhaled air causes immediate contraction of the bonchi with a peculiar tightness in the nose, throat and chest. This is accompanied by a strange sensation difficult to describe, which the researcher learns to recognize as a warning sign that gas is loose in the laboratory.

A person exposed to a low concentration of nerve gas in air until he has accumulated a lethal dose, experiences the following subjective symptoms:

The subject has a peculiar feeling in the eyes and notices that the lights are growing dim. White colors take on a yellow hue and he has severe pain in the eyes and temples when trying to focus on objects closer than four or five feet. He cannot read ordinary print. The pain is not noticeable when the eyes are closed.

Simultaneously, with the first breath there is a weird sensation of tightness in the nose and throat. The victim exhales before the air reaches the alveoli and tries another breath. This time the air reaches the lungs, which feel as though they are being squeezed. There is copious flow of saliva and marked nasal discharge. The victim is nervous and irritable and jerks involuntarily at any sudden noise. He is in a state of extreme mental confusion. His speech tapers off into an incoherent mumble. There are severe cramps in the abdomen and chest; his hands tremble; breathing is shallow and very rapid. A viscous, frothy exudate bubbles from the mouth and nose.

At about this point, subjective symptoms cease as the victim collapses, falls, and loses consciousness. An observer would notice that the pupils are about 1½ mm in diameter. Blood pressure falls; temperature drops and there is jerking of the head and limbs with loud chattering of the teeth. This condition soon progresses to violent convulsions followed by flaccid paralysis, asphxia, cyanosis, circulatory collapse and death.

A blood sample taken when the victim

had reached the state of mental confusion would have shown *no* RBC cholinesterase activity.

A massive dose of nerve gas by inhalation produces these symptoms almost simultaneously, except that the victim may take only one or two breaths before death—in which case there is insufficient exhalation to cause frothing at the mouth.

This poison received by ingestion or by the percutaneous route, produces the same symptoms except that myosis may be absent, particularly if the victim's eyes are protected by a good gas mask.

Treatment

Military personnel are taught to stop breathing and put on the mask immediately when warning is given or when the presence of gas is suspected. If the soldier notices subjective symptoms, he gives himself an injection from a syrette containing 2 mg. of atropine tartrate, which he carries with the mask. Speed is so essential that he does not take time to roll up a sleeve or trouser leg, but drives the needle through the clothing into the thigh and squeezes the solution into the muscle. If liquid nerve gas falls on the skin, it must be flushed off with water immediately; contaminated clothing removed, and the skin washed with soap and water or any alkaline solution.

These are the only self-aid measures available to the soldier. If the syndrome continues he may receive first aid from an aidman or another solider. In massive respiratory exposure there should be at least two trained men working on each casualty. If a victim is unconscious or in convulsions, three syrettes of atropine must be given immediately (two syrettes if one already has been self-administered—a total of 6 mg.). If there is respiratory difficulty, artificial respiration is started and continued until breathing is restored or the patient dies.

Artificial respiration is complicated by the presence of fluids in the mouth, throat and nasal passages. Fluids should be aspirated or wiped out with cloth or absorbent paper. This may be difficult, if not impossible, if the jaws are clamped tightly shut.

Under current regulations, a U.S. Army medical soldier or aidman is not permitted to administer treatment beyond the measures outlined above.

If a physician is present or the victim reaches a hospital in time for more comprehensive treatment, additional atropine may be given intravenously in 2 mg. increments until convulsions are relieved or signs of atropinization appear. These include cessation of salivation, dryness in the mouth, throat and skin, and acceleration of the pulse. The patient should be observed for effect after each injection before another is given. The effect of a 2 mg. dose of atropine begins within one minute after intravenous injection and eight minutes after intramuscular injection, and is maximal after six and 35 minutes respectively. If an iron lung is available, it may be used with such supplementary procedures as oxygen by pressure mask, periodic mouth-to-mouth insufflation in rhythm with the iron lung, etc. An oropharyngeal airway may be placed in the victim's mouth to aid in these procedures. If the patient has an upper respiratory obstruction which cannot be removed by aspiration, the physician may try to insert an endotracheal tube if the patient is relaxed and unconscious.

If these measures fail to produce an adequate airway, the physician may consider an emergency tracheotomy, and insertion of an endotracheal tube with an inflatable cuff, directly into the opening. The patient's lungs then may be inflated by forcing air through the tube by mouth or by use of a mechanical device.

It has been observed that persons who receive three to five lethal doses of GB may be saved by massive atropine therapy alone if the drug is given quickly. In such cases, intramuscular administration generally is not effective and injection into the vein or directly into the heart or lungs will be required.

Persons who have received 25, or even 50, lethal doses may survive if artificial respiration is started immediately and continued without interruption for several hours, along with large doses of atropine as indicated.

The atropine dosages mentioned here would seem intolerable; however, a nerve gas victim has a greatly increased tolerance for this drug. In one experiment, a Rhesus monkey survived a multi-lethal dose of GB with treatment by artificial respiration and injection of 0.5 mg. of atropine tartrate per pound of body weight.

The oximes show definite promise as an adjunct to atropine in the treatment of anticholinesterase poisoning. The exact mechanism of their action is not known, but they appear to exert their primary effects on the nicotine-like action of nerve gases. Drugs of this series seem to have a beneficial effect on the reversal of neuromuscular block and possibly in the reactivation of cholinesterase. There has been favorable evidence of improvement of patients accidentally exposed to organic phosphorous insecticides following use of an intravenous infusion of 0.5 to 2.0 grams of 2-PAM (pyridine aldoxime methiodate) or P_2S (pyridine methane sulfonate). The methane sulfonate salt recently was introduced in the United Kingdom for intramuscular injection. At the present time, work is being completed for final recommendations to the Surgeons General of satisfactory soluble compounds for military use.[4]

Oximes alone should *never* be considered as the primary treatment in the severe nerve gas casualty. It is an adjunct to the use of atropine and adequate resuscitation and, properly used, may shorten the time that a severely poisoned patient will require artificial respiration.

"Convulsions must be controlled. Barbiturates are contraindicated in the presence of respiratory depression, but may be used if adequate ventilation is being maintained by the resuscitator. Tridione also is effective."[4]

Other Chemical Agents

Up to this point the discussion has been limited to one among many classes of toxic chemical agents which are found in the arsenals of World Powers. Some of these weapons cannot be mentioned for security reasons. Among those which can be mentioned are incapacitating agents which produce temporary mental confusion, anesthesia, narcosis, paralysis, blindness, skin burns, nausea, etc. Under right conditions, the use of these agents might enable an aggressor to capture a non-protected city and subdue the entire population with virtually no risk to his own troops.

Among the psychochemicals which have been investigated are the lysurgic acid derivatives, particularly LSD 25, which in extremely small doses of the order of 0.05 to 0.30 mg. renders a person incapable of performing normal duties. Another is psilocin, the active principle of hallucinogenic Mexican mushrooms. Both compounds have been synthesized.

An improved form of "mustard gas," the old standby from World War I, is still included among the standard chemical agents in some countries. Other vesicants and skin irritants which have been investigated include the nitrogen mustards, phosgine oxime, and new and improved "tear gases" which irritate the skin as well as the eyes.

In civil defense planning we should recognize that a potential enemy has a wide choice of weapons with which he may inflict almost any desired effect or degree of damage on a non-protected population. These range from multi-megaton thermonuclear warheads through a long list of toxic chemicals to lethal or disabling biologic agents. However, it is possible through adequate planning and advance preparation to protect one's self against these weapons just as against bullets, fires, floods, tornadoes, epidemics, and other hazards to life, health and property.

Protection

Defense against chemical agents consists of detection and identification, individual and collective protection, decontamination, and treatment of casualties.

Detection and Identification—The U.S. Army Chemical Corps has developed effective automatic detection and alarm systems which give warning in the presence of minute quantities of nerve gas, but these are not available for general use. The first indication of a nerve gas attack probably would be the physiologic effects on the victims. Some persons downwind might be warned in time to take appropriate action.

Small, portable test kits have been developed for detecting war gases in the field. These kits give a color reaction in silica gel absorbers, on test papers, detector paint, etc. Detector kits are distributed to all military units down to company or platoon level. They are designed to detect, and identify as to type, hazardous concentrations of most standard war gases which are found in the chemical warfare arsenals of the World Powers. Test procedures require several minutes and must be performed by trained personnel. The results obtained are qualitative and presumptive, and serve only to indicate when it is safe to unmask or to enter an area without protection.

These kits have been procured by the Office of Civil and Defense Mobilization in limited quantity for civilian use. The official OCDM designation is CDV-810.

Other kits have been developed for detecting the presence of chemical agents in food and water.

Individual and Collective Protection—The standard protective mask developed by the U.S. Army Chemical Corps for military use protects the eyes, face and lungs against war gases under normal combat conditions. The filtering unit removes chemical agents from the inhaled air by adsorbtion on chemically treated activated charcoal. Also, it filters out radioactive dust as well as biologic agents which the enemy may have sprayed into the air.

The Office of Civil and Defense Mobilization has procured limited stocks of military-type masks for use of civil defense operational personnel who must continue to perform their duties while under attack. For general civilian use, the U.S. Army Chemical Corps is developing an inexpensive mask which affords the same protection as the military type, but which is less rugged and not suitable for continued wearing under operational conditions. It is contemplated that the civilian type mask eventually will be offered for sale to the general public through commercial channels.

Some types of protective clothing resist penetration by liquid agents and so afford protection to the skin against spray attack or during decontamination operations.

The only collective protection against chemical agents would be gas-proof structures having a filtered air ventilating system. Such ventilating systems have been developed by the U.S. Army Chemical Corps for installation in approved hospitals, underground civil defense emergency operating centers, etc. These systems come as complete units with filters, external ducts, blowers, and an electric or gasoline motor. These units presently are available, and are required to be installed in government-financed underground structures.

Decontamination—Decontamination of war gases may be accomplished by physical removal or chemical decomposition. Liquid nerve gas may be flushed off of the skin with water or decomposed by alkaline solutions. Liquid mustard gas should be blotted off and the skin decontaminated by application of protective ointment which is available to the armed forces.

Open areas, facilities and equipment contaminated by liquid agents eventually are decontaminated by evaporation or weathering. In the case of the common nerve gases, this would be accomplished in a few hours unless the liquid has been absorbed by porous materials. Liquid mustard gas has been known to remain active in the soil for years, but may be decomposed by the action of free chlorine when treated with chlorinated lime, laundry bleach, etc.

Potential enemies of the United States have the capability to launch massive chemical, biologic or thermonuclear attacks against the civilian population. In planning an attack—all other things being equal—the enemy would choose those weapons against which the victim nation has least protection.

The only civil defense measure which provides an acceptable degree of protection against ALL weapons is *underground structures*, equipped with filtered air ventilating systems and supplied with pure water and adequate food for long-term occupancy.

In the critical days that lie ahead, let us not look to the Government to save us. We must provide our own protection just as

our fathers did in pioneer days. The U.S. Public Health Service is providing superb leadership to the medical and allied professions in planning for recovery from war-caused disasters. The American Medical Association's Committee on National Emergency Medical Care under the chairmanship of Doctor Harold C. Lueth is making a high contribution to the survival potential of the nation, and has set a fine example of cooperation between Government and the professions.

In our civil defense planning it should be remembered that it is better to prevent disasters than to pick up the dead and injured after they happen. Therefore let us look to the construction of underground annexes to schools, industrial plants, government offices, homes and—by all means—hospitals, clinics, nursing homes and medical supply warehouses.

I believe it was Governor Val Peterson, former Director of the Federal Civil Defense Administration, who said, "In the next war we shall live underground or die aboveground!"

The time has come when we must *DIG IN OR DIE!*

BIBLIOGRAPHY

1. Martin, Gustav J.: Biological Antagonism—The Theory of Biological Relativity. New York: The Blakiston Company, 1951.
2. Department of the Army, TM 3-215, Military Chemistry and Chemical Reagents, Government Printing Office, 1956.
3. Stubbs, Marshall, Summerson, W. H., Lueth, H. D., et al.: Nonmilitary Defense—Chemical and Biological Defenses in Perspective, Advances in Chemistry Series 26, Washington, D.C., American Chemical Society, 1960.
4. Sim, Van M.: Medical Aspects of Chemical Warfare—Paper presented to AMA Symposium on Medical Importance of CBR Warfare. U.S. Army Chemical Warfare Laboratories, Army Chemical Center, Maryland. 1960.
5. Crozier, Dan: Civilian Medical Problems in the Defense Against Chemical and Biological Weapons—Paper presented to Medical-Health Section, Ninth U.S. Civil Defense Council Conference, Minneapolis 1960.
6. McNamara, Bernard P.: Medical Aspects of Chemical Warfare. Paper presented at Hahnemann Medical College and Hospital, Philadelphia. U.S. Army Chemical Research and Development Laboratories, Army Chemical Center, Maryland 1960.
7. First Aid and Treatment of Severe Nerve Gas Casualties, Medical Laboratories Field Therapy Committee, Chemical Corps Medical Laboratories, Army Chemical Center, Maryland 1955.
8. Kramer, Harry P.: Chemical Warfare Defense—Lecture Outline, Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio 1955.
9. McNinch, Joseph M.: A Look at the Future. Paper presented at AMA Convention, Miami—1960.

Disaster Nursing Test Available

The National League for Nursing's Comprehensive Achievement Test in Disaster Nursing, published on February 1, 1961, is designed to test the professional nurse's ability to function effectively in natural and enemy-caused disasters. Unlike other NLN achievement tests, this one will be available for graduate nurses as well as nursing students nearing graduation.

Assistance in the development of the test was received from persons associated with the NLN-OCDM project in disaster nursing, and representatives of many other organizations and agencies concerned with the problems of disasters and disaster nursing.

In addition to a total score, two subscores will be provided: one in general nursing knowledge applicable to disaster situations, and one in facts and principles peculiar to disasters and disaster nursing. Interested schools and agencies can get information about the test from the NLN Evaluation Service, 10 Columbus Circle, New York 19, New York.

News

Flying Physicians Are Ready

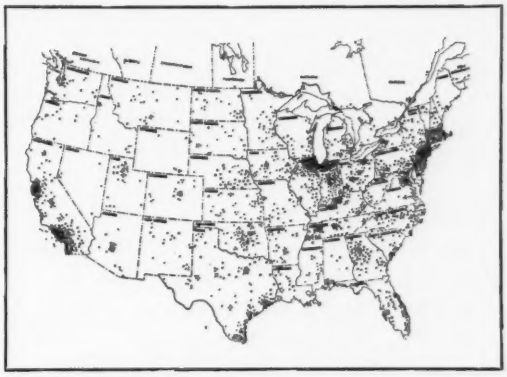
A unique organization of physicians stands ready at all times to voluntarily meet major medical disasters throughout the United States. Called the Flying Physicians Association, the group of 2000 physician-pilots is capable of rushing health care teams to any part of the country in a matter of a few hours.

The doctors own their own airplanes, and they keep them fueled and equipped with medical supplies and equipment—so they are available on a moment's notice to assist in overcoming a natural or man-made disaster. Each physician has one or more nurses standing by to accompany him on such a mission.

According to Frank H. Coble, M.D., FPA President from Richmond, Indiana, "It was not long after our group organized that we realized we could be a potentially potent force in rendering medical aid in the event of a major disaster in any part of our country."

Doctor Coble observed that a major disaster, such as a thermonuclear war, could virtually destroy trained health personnel in a specific area, to such an extent that medical help would have to come from some distance. "Surface travel would either be destroyed or congested by refugees," he said, "but the light planes of the Flying Physicians would have no trouble landing on improvised airstrips."

A "flying physician" is shown loading his airplane as two nurse-members of his team assist. Among supplies for an emergency flight would be: dressings, bandages, tape, sterile towels, oxygen, syringes, surgical instruments, narcotics, sedatives, vaccines, antitoxins, antiseptics.



The 2000 members of Flying Physicians are well-distributed throughout the United States. They are equipped and ready to respond to medical emergencies.

He explained that the initial role of the physicians might only be the relief of suffering and shock, as well as the triage (sorting of casualties) aspect. More comprehensive care could be offered when surface transportation opened up or when major airlifts were instituted.

The Flying Physicians Association estimates that a government-sponsored duplication of their service would cost the taxpayers about $61 million per year. On the other hand, the flying medics are offering their service to the American public at no cost to the government.

National headquarters of the organization is located in Tulsa, Oklahoma. Mark E. DeGroff, Box 3275, is Aviation and Business Administrator.

Members must be in good standing in their local and national medical societies, and must hold a valid aircraft pilot's license.

Port Johnson, M.D., Muskogee, is state chairman of the organization.

Home Preparedness Stressed

The most common query put to state civil defense officials is, "What is my specific role in civil defense?" And this is especially true coming from persons in professional fields.

In the instance of a medical doctor, he would perform the same every day functions —only on an organized and accelerated scale.

But often overlooked by persons in professional fields are the more simple, but necessary, phases of civil defense that are essential to the family home. The "Home Preparedness" program is the first federal program to be aimed directly at the home.

For nearly five years, every state civil defense director across the nation advocated such a program—for the home is the foundation of a strong civil defense program in any community. And the community CD program is the strongest link in the state CD program.

Subject for Workshop

In the beginning, "Home Preparedness" was advocated in areas where local civil defense leadership was lacking. But, today, the Home Preparedness program is a "packaged workshop kit" designed for groups to spread the civil defense word among families, regardless of local CD organization. When a group leader is appointed, or selected, then he or she will receive the workshop guide and the necessary materials to conduct a home preparedness course.

This is an ideal workshop for medical auxiliaries—but there is no reason why the men shouldn't be included, in fact they are encouraged to participate to the extent that time permits.

The printed workshop guide is backed up by a series of film-strips and recordings. This visual aid kit has been mailed to all county CD directors—but kits may be checked out from the state civil defense office.

Subject matter included in the Home Preparedness program is varied and practical. Participants learn the meaning of standard warning signals; the basics of radioactive fallout protection; they learn to plan for emergency heating, cooking and lighting; the meaning of conelrad and emergency sanitation methods.

Other Home Preparedness fields include: suggested emergency fire plans for the home; how to purify unsafe water; local CD plans and how to prepare family CD plans.

Survival Kit

It is in the Home Preparedness program that we encounter the terminology, "Survival Kit." This is an all-inclusive phrase that includes suggested food supplies, clothing and first aid supplies.

As such, a complete Survival Kit listing is not published in one assembled form—but two civil defense publications, when combined, do provide listings of the essential items of a Survival Kit. The two CD publications, "Between You and Disaster" and "First Aid—Emergency Action" may be obtained in quantities by merely requesting them from the state civil defense office, or local CD directors.

Show on the chart (opposite page) are the basic items that would make up what is termed a "Survival Kit."

Two publications, one of which is pictured at the left, are available in quantity from local Civil Defense offices or from Oklahoma Civil Defense, P.O. Box 3365, Oklahoma City, Oklahoma. They contain excellent, basic information for the general populace.

FIRST AID SUPPLIES

These emergency first aid items are for a family of four persons or less. Assemble them, wrap in a moisture-proof covering, and place in an easily carried box. Paste this sheet to the box cover and place the box in your shelter area.

FOR THESE PURPOSES	USE THESE	OR THESE	SUGGESTED QUANTITY
For open wounds, scratches, and cuts. Not for burns.	1. **Antiseptic solution:** Benzalkonium Chloride Solution, U.S.P., 1 to 1,000 parts of water.	Quarternary ammonium compounds in water. Sold under trade names as Zephiran, Phemerol, Ceepryn, and Diaprene Chlorides.	3- to 6-oz. bottle.
For faintness, adult dose ½ teaspoon in cup of water; children 5 to 10 drops in ½ glass of water. As smelling salts, remove stopper, hold bottle under nose.	2. **Aromatic spirits of ammonia.**	None.	1- to 2-oz. bottle.
For shock—dissolve 1 teaspoonful salt and ½ teaspoonful baking soda in 1 quart water. Have patient drink as much as he will. Don't give to unconscious person or semiconscious person. If using substitutes dissolve six 10-gr. sodium chloride tablets and six 5-gr. sodium bicarbonate (or sodium citrate) tablets in 1 qt. water.	3. **Table salt.**	Sodium chloride tablets, 10 gr., 50 tablets in bottle.	1 box.
	4. **Baking soda.**	Sodium bicarbonate or sodium citrate tablets, 5 gr., 50 tablets in bottle.	8- to 10-oz. box.
For a sling; as a cover; for a dressing.	5. **Triangular bandage,** folded, 37 by 37 by 52 in., with 2 safety pins.	Muslin or other strong material. Cut to exact dimensions. Fold and wrap each bandage and 2 safety pins separately in paper.	4 bandages.
For open wounds or for dry dressings for burns. These are packaged sterile.	6. **Two medium first aid dressings,** folded, sterile with gauze enclosed cotton pads, 8 in. by 7½ in. Packaged with muslin bandage and 4 safety pins.	a) Two emergency dressings 8 in. by 7½ in., in glassine bags, sterilized. One roller bandage, 2 in. by 10 yds. b) Four large sanitary napkins, wrapped separately and sterilized. One roller bandage, 2 in. by 10 yds.	As indicated.
For open wounds or for dry dressings for burns. These are packaged sterile.	7. **Two small first aid dressings,** folded, sterile with gauze enclosed cotton pads and gauze bandage, 4 in. by 7 in.	Twelve sterile gauze pads in individual packages, 3 in. by 3 in. One roller bandage, 1 in. by 10 yds.	As indicated.
For eyes irritated by dust, smoke, or fumes. Use 2 drops in each eye. Apply cold compresses every 20 minutes if possible.	8. **Eye drops: Castor oil.**	Bland eye drops sold by druggists under various trade names.	½- to 1-oz. bottle with dropper.
For splinting broken fingers or other small bones and for stirring solutions.	9. **Twelve tongue blades, wooden.**	Shingles, pieces of orange crate, or other light wood cut to approximately 1½ in. by 6 in.	As indicated.

For purifying water when it cannot be boiled. (Radioactive contamination cannot be neutralized or removed by boiling or by disinfectants.)	10a. **Water purification tablets** (iodine). Trade names—Globaline, Bursoline. 10b. **Household bleach solution** (approx. 5% available chlorine) 3 drops per quart.	Tincture of iodine or iodine solution (3 drops per quart).	a. Bottle of 50 or 100. b. One small bottle.
For bandages or dressings: Old soft towels and sheets are best. Cut in sizes necessary to cover wounds. Towels are burn dressings. Place over burns and fasten with triangular bandage or strips of sheet. Towels and sheets should be laundered, ironed, and packaged in heavy paper. Relaunder every 3 months.	11. **Large bath towels.**	None.	2.
	12. **Small bath towels.**	None.	2.
	13. **Bed sheet.**	None.	1.
For administering stimulants and liquids.	14. **Paper drinking cups.**	Envelope or cardboard type.	25 to 50.
Electric lights may go out. Wrap batteries separately in moisture proof covering. Don't keep in flashlight.	15. **Flashlight.**	Must be bought.	1.
	16. **Flashlight batteries.**	Must be bought.	3.
For holding bandages in place.	17. **Safety pins, 1½ in. long.**	None.	12 to 15.
For cutting bandages and dressings, or for removing clothing from injured body surface.	18. **Razor blades, single edge.**	Sharp knife or scissors.	3.
For cleansing skin.	19. **Toilet soap.**	Any mild soap.	1 bar.
For measuring or stirring solutions.	20. **Measuring spoons.**	Inexpensive plastic or metal.	1 set.
For splinting broken arms or legs.	21. **Twelve splints, plastic or wooden,** ⅛ to ¼ in. thick, 3½ in. wide by 12 to 15 in. long.	A 40-page newspaper folded to dimensions, pieces of orange crate sidings, or shingles cut to size.	As indicated.

Note.—To sterilize substitutes, wrap in square cloth, aluminum foil, or brown wrapping paper, and place in 300-degree oven for one hour.

Food

To estimate how much food you should buy for *your* family's 2-week home food storage, multiply the number of people in your household by the amounts listed below. Amounts listed below are for one person for two weeks. If the children are young, the amounts can be decreased by one-fourth. If the children are infants, canned baby foods should be substituted for some of the other canned foods. Be sure to plan for old people or invalids.

Check "PANTRY" at least once a month, preferably more often, and rotate regularly.

Bottled water must be changed every six weeks.

MILK: Powdered nonfat dry, 2 pkgs.; evaporated, 4 (14½-oz.) cans.

JUICES: Tomato, 2 (1-qt. 14-oz.) cans; Orange, 2 (1-qt. 14-oz.) cans; Grapefruit, 2 (1-qt. 14-oz.) cans.

FRUITS: Peaches, 2 (1-lb. 14-oz. cans; Pears, 2 (1-lb. 14-oz.) cans; Dried prunes or apricots, 2 lbs.

VEGETABLES: Tomatoes, 4 (16-oz.) cans; Peas, 4 (16-17-oz.) cans; Corn, 2 (12-16½-oz.) cans; Green beans, 2 (15½-oz.) cans.

SOUPS: Assorted, 8 (10½-oz.) cans.

MEATS AND MEAT SUBSTITUTES: Beef stew, 2 (1-lb.) cans; Salmon, 2 (1-lb.) cans or Tuna, 4 (6-7-oz.) cans; Spaghetti and meat balls, 2 (15½-oz.) cans; Baked beans, 2 (1-lb.) cans; Cheese, 2 jars; Peanut butter, 2 jars.

CEREALS: Ready-to-eat, 14 (individual-serving pkgs.).

CRACKERS-COOKIES: 2 boxes.
BEVERAGES: Instant coffee, 2 (2-oz.) jars or instant tea, 2 (1-oz.) jars or instant cocoa, 2 (1-lb.) pkgs.

SOFT DRINKS: 24 bottles.

Other Supplies

Water in jugs or bottles, salt, sugar.
Matches, fuel, cooking utensils, can opener, tableware and utensils, paper supplies, old newspapers.

Portable radio, flashlight, candles and holders, first-aid kit, blankets, pail, garbage container.

The Bible or other family religious requirements.

Games and amusements for the children.
Optional supplies: Candy, gum, tobacco.

If you carefully study the recommended list of items you should have on hand, and which make up a Survival Kit, you will readily note they are, in most instances, every day items. Therefore, you might comment that you are not being provided new or startling information.

But—could you put your finger on each of the items in less than three minute's time? Are the various items assembled, or centralized, and readily accessible? Do all members of your household know where all of these items are located? Do all members of your household know how to use or apply the first aid items?

If kitchen cabinet space, or pantry space, permits—you might centralize the foods on one particular shelf. The key to the situation is "organization within the household."

County and city medical associations desiring printed copies of the two publications, or any civil defense publication, should address their requests to Oklahoma Civil Defense, P.O. Box 3365, Oklahoma City 5, Oklahoma. These brief and easy to read CD publications may be obtained in sufficient quantities for individual distribution.

Ninth Annual Conference on Disaster Medical Care

"Defense Training for all—A resource for National Defense" has been set as the theme for the ninth annual Conference on Disaster Medical Care in New York City, Saturday, June 24.

Sponsored by the American Medical Association's Council on National Security, the theme of the one-day meeting at the Statler-Hilton Hotel will be developed by the United States Air Force Medical Service.

Following opening remarks by Doctor Leonard W. Larson, AMA president-elect, Bismarck, North Dakota, Maj. Gen. O. K. Niess, surgeon general of the Air Force, will discuss the adaptability of military medical experience, research, and operations in civilian disasters.

The morning session, under the general heading, "The Problem," will include discussions on Nuclear War and Your Community, The Value of Training and Exercises, Transportation of the Injured, and Communications. A symposium entitled "Organizing Community Resources" will portray the civil defense plans and activities of a local mayor, police and fire chiefs, professional health representatives, and other local groups.

"Meeting the Problem" will be the general topic for consideration at the afternoon session. Specific subjects for discussion are Radiation Fallout Detection and Monitoring; Evaluating Homes, Buildings and Other Shelters; Rudiments of Universal First Aid Training; and Techniques for Survival—Water, Food, Clothing, Shelter Improvisations.

Other program subjects will be presented on Mass Behavior Patterns in Disaster; Legal Obligations, Public Laws, Martial Law; Moral Obligations in Disaster; and Defense Planning—A Corporate Effort for Survival.

An interesting feature of the program is a one hour skit on "Community Responses to Disaster."

Persons desiring to attend the conference should write to the AMA Council on National Security, 535 North Dearborn Street, Chicago 10, Illinois, for additional information and advance registration.

Civilian Protection Discussed In Germ or Gas War

As a defense against possible biologic or chemical warfare, the Office of Civil and Defense Mobilization (OCDM) is planning a nationwide detection system and a program calling for mass distribution of protective masks.

Plans for protecting the civilian population against such attacks were discussed by Leo A. Hoegh, former OCDM director, in an exclusive interview with *Today's Health* magazine, published by the American Medical Association.

"Our nationwide fallout detection and monitoring network is being equipped to detect gas and germ weapons effects," Hoegh said in (March) *Today's Health.* "This will take time and money, but the work is proceeding."

Early detection, identification, and warning systems are a major defense against chemical and biologic warfare.

OCDM also is preparing for mass production of a civilian protective mask of new design which will provide easy breathing, good vision, and easy conversation, Hoegh said.

In the new mask, he said, the bulky canister used to filter out the harmful agents has been replaced by filter pads located at cheek positions.

Public distribution of the masks will be through selected retail stores at about $2.50 each, he said. They will be available in six sizes.

"A public information program concerning the use of the protective masks will be timed with their retail distribution," he added.

Asked specifically about biologic warfare, Hoegh said:

"The Department of Health, Education and Welfare, under OCDM delegation of authority, has initiated the program to protect the civilian population. Its major objective is education of individuals and families in self-protective measures."

"This program also includes the control and prevention of diseases resulting from BW (biologic warfare) attacks; the safeguarding of our food, pharmaceutical, and water supplies; special training and education of doctors, nurses, and other professional personnel in the recognition and diagnosis of the diseases involved; rapid detection and identification of the causative agents; care, treatment and rehabilitation of casualties, and the stockpiling of necessary emergency drugs, pharmaceuticals, equipment, and supplies."

Citizens should have all standard immunizations offered by their doctor and local health authorities, he said, and the highest priority has been given by OCDM to the research and development of immunizing agents against diseases for which no protective biologics now are available.

Although there has been much talk about biologic and chemical warfare, Hoegh pointed out, "this black art hasn't yet reached the level of efficiency of nuclear war."

A recent special study for the Senate Foreign Relations Committee has described chemical and biologic weaponry as "exaggerated" as to present military utility and still far from any possible use capable of strategic decisiveness, he said, although this picture may change in the next few years.

The graver dangers of nuclear war merit our more intensive efforts, he said, but we certainly are not neglecting biologic and chemical warfare defense.

Texas Stockpile Holds $5 Million in Medical Supplies

Bastrop, Texas, site of old Camp Swift, is now converted for use as a Civil Defense Medical Stockpile.

Approximately $5 million worth of supplies are ready for immediate shipment, and adequate transportation is available.

The supply point is designed as a "back up" supply, to be used *after* local resources are exhausted.

Multi-Purpose Food Developed for CD Shelters

A multi-purpose food called MPF has been developed for storage in home shelter areas.

The dry, granular mixture is rich in protein and contains nine essential vitamins and minerals. It is so highly concentrated that two ounces provides one-third the minimum daily adult requirements for vitamins A and D, thiamine, riboflavin, niacin, iron, calcium, phosphorus and iodine; plus one-third of the recommended daily adult allowance for protein.

MPF was developed by General Mills in cooperation with the Meals for Millions Foundation of Los Angeles. It is particularly suited for long term storage, and thus, with its other qualities, is an ideal civil defense item.

The Office of Civil and Defense Mobilization recommends, among other things, that everyone have a two weeks food supply in his home shelter area. MPF is one simple, inexpensive way of complying with this recommendation insuring adequate nutritional protection during short periods of emergency.

The manufacturer suggests that one 4½ pound tin of MPF be stored in the shelter for each member of the family, plus like quantities in each automobile operated within the family.

MPF is a food which is best eaten in blends or mixtures with other foods. For emergency use, however, the precooked substance may be eaten alone. It will appease the appetite and dietary demands, but will need to be supplemented to prevent loss of weight. Two ounces of MPF contains 150 calories.

Tins of MPF, each of which supply food for one person for twelve to fourteen days, are available in some grocery stores. Many persons, however, will find it necessary to order MPF (at $2.50 per tin) from General Mills, Inc., Box 300, Minneapolis 60, Minnesota. The food comes hermetically sealed against infestation or contamination.

12th County Medical Society CD Conference

The American Medical Association is sponsoring its 12th County Medical Society Conference on Disaster Medical Care, to be held November 4-5, 1961, at the Palmer House, Chicago.

This meeting brings together representatives of state and county medical societies from all over the United States. On Saturday afternoon, November 4, eight regional workshop sessions are scheduled, providing an opportunity for the conferees to discuss mutual problems and develop plans to overcome these problems. In past meetings, these workshops have been well received and of much practical value to "local level" representatives.

A symposium at the meeting will be devoted to "The County Medical Society and Disaster Medical Care." Topics will include: Objective-Purpose-Organization for Disaster Medical Care; Relationship of County and State Societies in Disaster Planning; Educational and Training Programs; Mutual Aid in Large-Scale Disaster—County and State Concepts; Health Mobilization in Total Warfare; and Rural Medical Support for Target City Disaster.

A second symposium will include pertinent topics under the general heading of "Training of Allied Health Professions and Services." Progress reports will be given by the Office of Civil and Defense Mobilization and the PHS Division of Health Mobilization.

William H. Reiff, M.D., Chairman of the OSMA's Disaster Medical Care Committee, is urging Oklahoma's county medical societies to send representatives to the conference. Doctor Reiff points out that aside from Oklahoma and Tulsa counties, no other counties have participated in previous conferences.

"Effective disaster medical care planning begins at the local level," Doctor Reiff said, "and I hope our county societies will take advantage of the information to be offered at this important meeting."

Roster of Military Medical Personnel

NATIONAL GUARD (45th Infantry Division)

Col. Claude B. Knight, Wewoka, Division Surgeon, 45th Inf. Div.

Col. John B. Miles, Anadarko, Battalion Commander, 120th Med. Bn.

Lt. Col. Paul Kernek, Holdenville, Battle Group Surgeon, 1 BG 180th Inf.

Capt. Norman A. Cotner, Grove, Battle Group Surgeon, 1 BG 179th Inf.

Capt. Robert R. Hillis, Tulsa, Battle Group Surgeon, 2 BG 179th Inf.

Lt. Max A. Deardoff, Tulsa, Commander Medical Platoon, Hq. Co. 2 BG 179th Inf.

Capt. Bill E. Woodruff, Hugo, Commander Medical Platoon, 2 BG 180th Inf.

Lt. James R. Rhymer, Clinton, Battalion Surgeon, 1 Med. Tk. Bn. 245th Armor

Lt. Billy E. Blevins, Oklahoma City, General Medical Officer, 120th Engineer Battalion

Capt. James W. Wilson, Atoka, Surgeon, 45th Inf. Div. Arty.

Capt. Boyd K. Lester, Oklahoma City, Div. Psychiatrist, 45th Inf. Div.

Capt. Rodney D. Steward, Oklahoma City, Aviation Medical Officer, 45th Inf. Div.

Capt. William R. Cleaver, Oklahoma City, Company Commander, Co. B (Cir.) 120th Med. Bn.

Lt. Sterling M. Daubrava, Jr., Midwest City, General Medical Officer, Co. B (Cir.) 120th Med. Bn.

Capt. William G. Bernhardt, Midwest City, General Medical Officer, Co. B (Cir.) 120th Med. Bn.

Lt. Dougles C. Wilkerson, Jr., Oklahoma City, General Medical Officer, Co. B (Cir.) 120th Med. Bn.

U. S. ARMY RESERVE

Col. William H. Reiff, Hq., 95th Div., Okla. City

Lt. Col. Henry D. Wolfe, Hq., 95th Div., Okla. City

Col. Hervey A. Foerster, CO, 44th Evac. Hosp., Okla. City

Col. Edward T. Cook, Jr., 44th Evac. Hosp., Okla. City

Col. James D. Dewar, 44th Evac. Hosp., Okla. City

Lt. Col. James T. McInnis, Sr., 44th Evac. Hosp., Okla. City

Maj. Paul T. Condit, 44th Evac. Hosp., Okla. City

Maj. James A. Webb, 44th Evac. Hosp., Okla. City

Capt. David W. Foerster, 44th Evac. Hosp., Okla. City

Capt. Robert H. Smiley, 44th Evac. Hosp., Okla. City

Capt. Harold H. Mings, 44th Evac. Hosp., Okla. City

Capt. Robert E. Myers, 44th Evac. Hosp., Okla. City

Capt. Richard M. Lee, CO Med. Detach., 4th Obsn. Bn., 26th Arty., Norman, Okla.

Maj. David J. Geigerman, 91st Trans. Bn. (Helicopter), Okla. City

Maj. John R. McInnis, 310th Replacement Gp., Okla. City

Maj. Arthur W. Buswell, CO, 372nd Med. Detach., Enid, Okla.

Capt. John M. Hill, Jr., 401st Arty. Group, Tulsa, Okla.

Capt. William E. Hall, CO, 425 Med Detach., Tulsa, Okla.

Capt. Frank A. Klingman, 425 Med. Detach., Tulsa, Okla.

District I Nurses Plan Course on "Expanded Function"

A twenty-hour workshop course on "Expanded Function" is being planned by District I of the Oklahoma State Nurses Association.

The term "expanded function" is used to describe the roles to be played by persons other than physicians, in the event of a large-scale disaster. Mass casualty conditions will make it necessary to relieve surviving physicians of functions which others can perform.

Recognizing this, and in cooperation with the National Emergency Medical Care Plan, the nurses will include on their program such topics as: Immunizations, Parenteral Medications, Catheterization, Management of Normal Obstetrics, Emergency Tracheotomy, Bandages and Dressings.

Selected List of Training Aids

These visual aids are useful in orienting and training various groups in aspects of health mobilization. They should be obtained directly from the distributor listed for each. Further references to training aids may be obtained from the Oklahoma State Medical Association's Executive Office, Box 9696, Oklahoma City.

Disaster Aid: Public Health Aspects (16 mm, b&w, sound, 11 min., 1955). Explains the health problem created by natural disasters and the methods used to solve these problems, using a flood as an example. Demonstrates the role of local, State, and Federal health agencies in combatting the resultant public health dangers. Suitable for showing to civil defense, public health, and civic groups. *Available:* Chief, Communicable Disease Center, Public Health Service, U.S. Department of Health, Education, and Welfare, Atlanta 22, Georgia, Attention: Audiovisual.

Disaster Plan (16 mm, color, sound, 17 min.). This film shows how a hospital and community are able to spring into action to care for victims under a smoothly coordinated advance plan of action. The film is based on procedures of the American Hospital Association, as set forth in their booklet, "Principles of Disaster Planning for Hospitals," and is produced in cooperation with that organization. Suitable for hospital and public health personnel. *Available:* Abbott Laboratories, Film Service Department, North Chicago, Illinois.

Lease of Life (16 mm, b&w, sound, 25 min.). An introduction and orientation to the purposes and use of a New York State Improvised Emergency Hospital in a simulated disaster. Suitable for showing to a general audience. *Available:* New York State Department of Health, Office of Medical Defense, 84 Holland Avenue, Albany 8, New York.

Nerve Gas Casualties and Their Treatment (16 mm, color, sound, 25 min., 1957). Explains causes and effects of nerve gases and treatment of casualties. Discusses detection of and protection from gases, and outlines various methods of treatment and decontamination. Suitable for showing to medical, paramedical and associated professional groups, and also official civil defense personnel. *Available:* U.S .Department of Agriculture, Motion Picture Service, Washington 25, D.C.

Off-Site Monitoring of Fallout from Nuclear Tests (16 mm, color, sound, 29 min., 1958). This shows the radiological safety activities of the U.S. Public Health Service in the off-site area of the Atomic Energy Commission test site in Nevada. Suitable for showing to a general audience. *Available:* Chief, Communicable Disease Center, Public Health Service, U.S. Department of Health, Education, and Welfare, Atlanta 22, Georgia, Attention: Audiovisual.

Public Health Problems in Mass Evacuation (16 mm, b&w, sound, 13 min., 1957). Presents public health problems arising from the mass evacuation of a large urban population. Suitable for civil defense and public health personnel, Parent-Teacher Associations, civic clubs, and television audiences. *Available:* Chief, Communicable Disease Center, Public Health Service, U.S. Department of Health, Education, and Welfare, Atlanta 22, Georgia, Attention: Audiovisual.

The Day Called "X" (16 mm, b&w, sound, 28 min., 1958). Prepared by CBS. The story of Portland, Oregon's preparation for atomic attack. This dramatic motion picture provides important guidelines for other communities to follow in developing their civil defense programs within the context of existing governmental services. Suitable for showing to a general audience, civic groups, and for television use. *Available:* Office of Civil and Defense Mobilization, Battle Creek, Michigan.

Filmograph

The Civil Defense Emergency Hospital (16 mm, color, sound, 16¼ min., 1959). Illustrates the purpose and function of the 200-bed emergency hospital unit. Outlines the history, storage procedures, transportation, setting up and operation of the CDEH. Suitable for showing to a general audience, and for television use. *Available:* Office of Civil and Defense Mobilization, Battle Creek, Michigan.

Filmstrip

The Civil Defense Emergency Hospital (Slidefilm, 35 mm, color, 45 slides and 11 titles, 1961). An orientation to the origin, mission, contents and functions of the 200-bed Civil Defense Emergency Hospital. Views from training exercise show the operation of each functional section of the hospital. Suitable for lay personnel, and for medical, allied-medical, civil defense, public health, and associated professional groups. Helpful in briefing groups preparing for a training exercise with the hospital. *Available:* Chief, Training Branch, Division of Health Mobilization, Public Health Service, U.S. Department of Health, Education, and Welfare, Washington 25, D.C.

Auxiliary Meeting Features "Food for Survival"

Among the principal topics to be discussed when the Woman's Auxiliary to the AMA meets in New York City, June 26-28, will be the presentation of "Food for Survival," by Mrs. Neil W. Woodward, Oklahoma City.

Mrs. Woodward is Chairman of the Auxiliary's national committee on Civil Defense.

More than 3,000 physicians' wives are expected to attend the meeting, which is being held in conjunction with the AMA's Annual Meeting, June 25-30. Headquarters for the Auxiliary will be the Roosevelt Hotel.

Auxiliary News

U.S. Population Prepared

"Organization completed—22 million U.S. citizens organized in volunteer self-defense groups, fire-fighters, shelter attendants and first-aid workers! Three compulsory training courses completed for all citizens, with plans this year to complete 18-hour courses for every citizen between 16 and 55."

Do these facts help you breathe more easily, relax a little? Read further: "Every home, every factory and every school have bomb shelters, or the equivalent of shelter for emergency protection. Cities have adequate protection; also, every urban citizen has the added comfort of knowing evacuation procedure, with assurance that the government has facilities for handling transference to outlying communities."

Then, why all the furor, if we are making such progress? What is wrong? Just this: unfortunately, this comforting article is transference of fact. This information is not by any imaginative projection applicable in the United States of America—statistics are from another U.S.—Soviet Russia. The report was made by Leon Goure, leading authority in our country on Soviet civil defense, at a civil defense conference held in February at the University of California at Los Angeles.

Sometimes it has seemed that Auxiliary members might possibly spend more time listening to TV commercials advertising detergents than in listening to civil defense programs giving instructions on war deterrents. What is concretely considered a deterrent? Mrs. Neil Woodward, Oklahoma County, who is our National Civil Defense Chairman, reports in the National *Bulletin* on the Conference on Disaster Medical Care held jointly by the United States Public Health Service and the AMA Council on National Security.

Mrs. Woodward states in her report: " . . . it was emphasized that a prepared civil defense is an essential deterrent to war and that the nation can survive if enough people are willing to make adequate preparation now." She explains the availability in the near future of a medical self-help program, definite instructions and slides, *The Primer for Survival.*

Auxiliary Apathy

What has our attitude as Auxiliary members been, what is it now, and what is it to be?

We have had national, state and county civil defense committees. They have, in turn, presented reports and information in regard to materials available for programs and community coverage to every member attending auxiliary meetings. What has happened is this: civil defense questionnaires have never been returned; and home preparedness kits may still lie in desks, or they may have been tossed out—at least, they have seldom been returned.

Each year we are asked in annual reports what programs have been well-attended. Civil Defense programs are often either omitted completely or poorly attended; book reviews or style shows are always best attended. Some auxiliaries have apologetically sneaked programs, by announcing some other subject, then greeting those attending with teams of qualified members who type blood down the line. A civil defense demonstration follows—and surprised participants, truly captive, are spoon-fed essential information they would have otherwise missed.

The Future?

Now we are jolted. Major Gagarin has accomplished this, with the aid of increased tension in regard to the Cuban revolt. As always, we urge you to read and to study and to listen and to evaluate. Read *U.S. News and World Report: Russia's Triumph in Space;* Major General Medaris's *Countdown for Decision;* work with your local Civil Defense; contact your County Medical Society's chairman on civil defense. Auxiliary members *always* rally when they are aware of the time and the need. Both have arrived.

Winslow Homer "THE HERRING NET" *Art Institute of Chicago.*

STRAIN

Strain is a necessary component of man's efforts to move his external environment, but all too often brings on extreme pain and trauma when hard stools are moved after repair of rectal disorders. Metamucil adds soft, bland bulk to the bowel contents to stimulate normal peristalsis and also hold water within stools to keep them soft and easy to pass. Thus Metamucil, with an adequate water intake, is of great help in minimizing painful trauma to postsurgical rectal tissue. Metamucil promotes regularity through "smoothage" in all types of constipation.

brand of psyllium hydrophilic mucilloid

Metamucil®

Available as regular Metamucil or as the new lemon-flavored Instant Mix Metamucil

SEARLE

MISCELLANEOUS ADVERTISEMENTS

HOUSE PHYSICIANS NEEDED immediately for Oklahoma City's Baptist Memorial Hospital. Contact Mr. James Henry, 5800 N.W. Grand Blvd., Oklahoma City.

VACANCIES—1 General Surgeon, 1 Internist and 1 Admitting Physician for 390 bed Veterans Administration Hospital; Board Certified or Board eligible preferred for surgeon and internist; prefer Oklahoma licensure; salary range $7,560 to $15,030 depending upon qualifications; plus 15% additional if Board Certified, not to exceed $17,200; fringe benefits; citizenship required; preceptorship in General Surgery available. Write: Manager, Veterans Administration Hospital, Muskogee, Oklahoma.

FOR SALE: Beautiful walnut desk, 36″ x 66″, with three matching leather chairs. Like new—and priced right. Contact Frank H. Cooper, M.D., 502 South Crawford, Norman. Phone JEfferson 4-5322 or JEfferson 4-6644.

WANTED: Internist to join old established group in town of 10,000 population in West Texas. Need not be Board certified but with adequate residency training. Write Key A, THE JOURNAL, Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City, Oklahoma.

GENERAL PRACTICE, age 29; three years experience; military service completed; Oklahoma University School of Medicine graduate; married and have children; AAGP. Desires to locate with a small group or with another man, in town of 5,000 or larger. Available immediately; would also consider solo practice. Contact Key C, c/o Oklahoma State Medical Association.

WANTED: Physician to join Clinic and Hospital Staff at Clinton-Sherman Air Force Base. Contact Col. S. A. O'Brian, 857th Medical Group, Clinton-Sherman AFB, Oklahoma. Phone Clinton, Oklahoma FA 3-2010, Ext. 326.

WANTED: General Practice partnership or salary leading to partnership location by 1956 graduate of the University of Oklahoma School of Medicine. Age 29, married, two children. One year rotating internship, one year rotating general practice residency and two and one half years in the U. S. Navy. Available after April 15, 1961. Write Jack D. Shirley, Lt. MC USNR, 4332 NW 22nd, Oklahoma City, Phone WI 3-3622.

WANTED: Surgeon to join old established group in town of 10,000 population in West Texas. Need not be Board certified but with adequate residency training. Write Key A, THE JOURNAL, Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City, Oklahoma.

HOUSE PHYSICIANS NEEDED immediately for Tulsa's new St. Francis Hospital. Contact Key B, The Journal of the Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City, Oklahoma, for further information.

FOR SALE: Instruments and office equipment. Contact C. O. Epley, M.D., 1200 North Walker, Oklahoma City, Oklahoma.

SOUTHEAST KANSAS: For Sale or lease, modern, completely equipped, x-ray, eight room office designed to accommodate one or two doctors. Two story building; office on first floor; upstairs suitable for living quarters or rental, county seat town of 3300, trade area 10,000; new 40 bed hospital, high school, three grade schools, one parochial school, 25 miles from Joplin, Missouri, Miami, Oklahoma and Pittsburg, Kansas. Well established 17 year practice. Doctor deceased. Write Mrs. J. W. Spearing, 600 East Maple, Columbus, Kansas.

PHYSICIAN WANTED: Laverne, Oklahoma, population 2,000, plans to build a new hospital in the near future. No practicing M.D.s in town at present. Contact Wayne Carlisle, Carlisle Drug, Laverne.

Completely Equipped Office Space, 318 N.W. 13th Street, Oklahoma City. Rent—Lease or Sell equipment. Part time, if desired. Excellent secretarial assistant with E.C.G. and X-ray experience. Phil White, M.D., CE 5-7676.